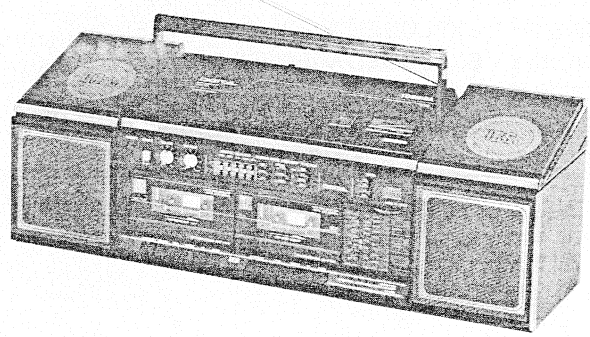
SERVICE DATA
FILE NO. 110-521

TOSHIBA

CD STEREO RADIO CASSETTE RECORDER

RT-7096



SPECIFICATIONS

■ Cassette Deck

Cassette tape used:	Normal: C-30 ~ C-90
	CrO_2: C-46 ~ C-90
	Metal: C-46 ~ C-60
Tape speed:	4.8 cm/sec.
Track system:	Four-track two-channel stereo
Recording system:	AC bias
Erasing system:	AC erasing
Frequency response:	Normal: 70 Hz to 14 kHz
	CrO_2: 60 Hz to 15 kHz
	Metal: 60 Hz to 16 kHz

■ Compact Disc Player

Type:	Compact disc player with optical pickup
Quantization:	14-bit linear
Channels:	Two channels (stereo)
Frequency response:	20 Hz to 20 kHz
Total harmonic distortion:	0.01% (1 kHz)
Dynamic range:	80 dB (1 kHz)
Channel separation:	80 dB (1 kHz)
Wow and flutter:	Below measurable limit
Pickup:	Semiconductor laser pickup

■ Tuner

Receiving frequency ranges:	FM: 87.5 MHz to 108 MHz
	SW: 5.9 MHz to 15.4 MHz
	MW: 526.5 kHz to 1606.5 kHz
	LW: 148.5 kHz to 283.5 kHz
Intermediate frequency:	FM: 10.7 MHz
	AM: 460 kHz
Antennas:	FM/SW: Telescopic antenna
	LW/MW: Ferrite-core antenna

■ General

Speakers:	Dynamic woofer (100mm diam.) x 2
	Passive radiator (120mm diam.) x 2
Terminals:	PHONES jack x 1
	AUX jack x 2
	CD OUT jack x 2
	SPEAKER terminal x 2
Power supply:	AC 220V, 50 Hz (Europe)
	AC 240V, 50 Hz (U.K.)
Power consumption:	35W
Dimensions:	660(W) x 227(H) x 191(D) mm
Weight:	8.2 kg (without batteries)

Specifications are subject to change without notice.

K-TE, TU

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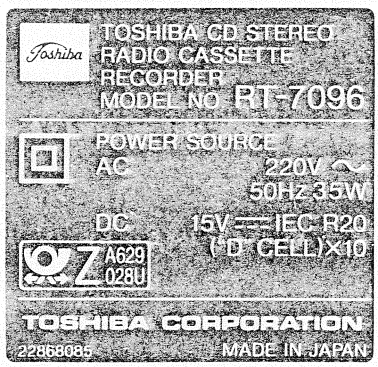
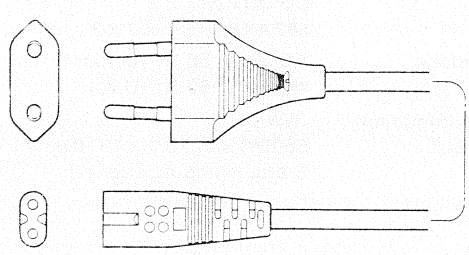
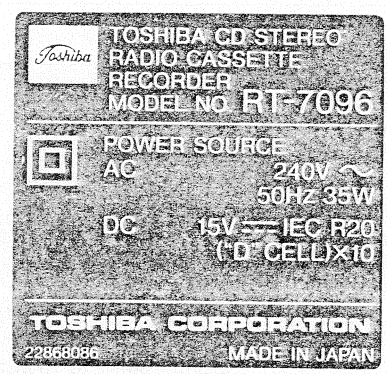


Europe





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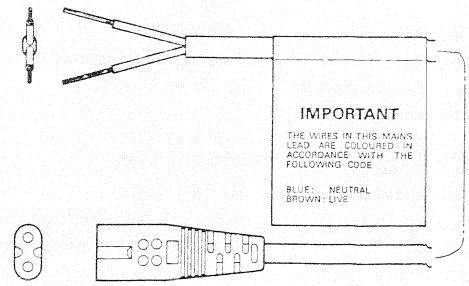
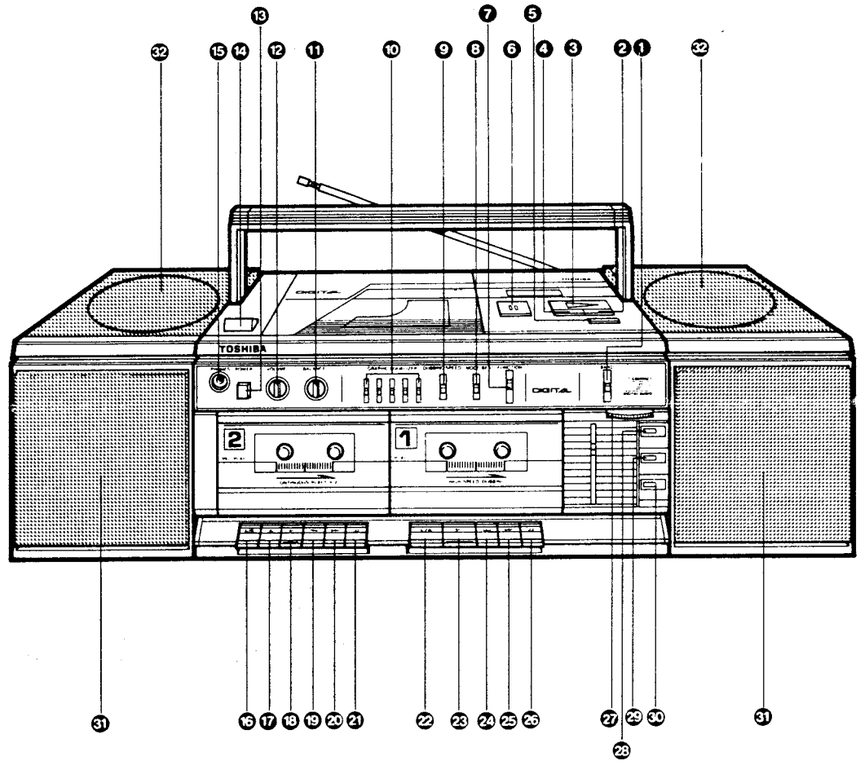
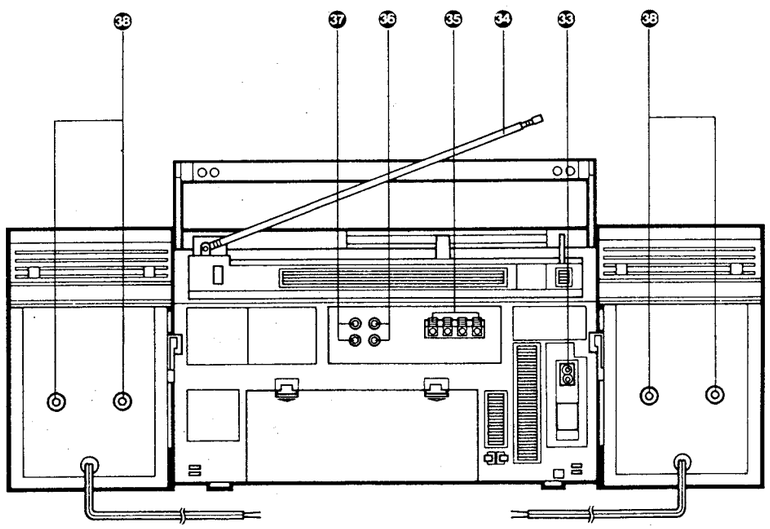


1. OPERATING CONTROLS





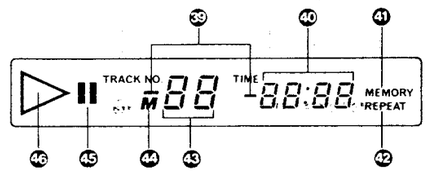
❶ **[BAND] Selector**
❷ **[UP] Button**
❸ **[PLAY/REPEAT] Button**
❹ **[DOWN] Button**
❺ **[DISPLAY] Button**
❻ **[PAUSE/STOP/MEMORY] Button**
❼ **[FUNCTION] Selector**
❽ **[MODE/BEAT] Selector**
❾ **[DUBBING SPEED] Selector**
❿ **[GRAPHIC EQUALIZER] Controls**
⓫ **[BALANCE] Control**
⓬ **[VOLUME] Control**
⓭ **[POWER] Button**

Note:

OFF position: This unit remains connected to the mains supply in the OFF position. Disconnect the power cord when the unit is not going to be used for a long time.

⓮ **[OPEN] Button**
⓯ **[PHONES] Jack**
⓰ **[STOP/EJECT] Button**
⓱ **[RECORD] Button**
⓲ **[PLAY] Button**
⓳ **[REWIND] Button**
⓴ **[FF] Button**
㉑ **[PAUSE] Button**
㉒ **[STOP/EJECT] Button**
㉓ **[PLAY] Button**
㉔ **[REWIND] Button**
㉕ **[FF] Button**
㉖ **[PAUSE] Button**
㉗ **[TUNING] Knob**
㉘ **[BATTERY] Indicator**
㉙ **[CD OPERATION] Indicator**
㉚ **[FM STEREO] Indicator**
㉛ **Woofer Speakers**
㉜ **Passive Radiator**
㉝ **[AC POWER] Socket**
㉞ **Telescopic Antenna**
㉟ **[SPEAKER] Terminals**
㊱ **[AUX] Jacks**
㊲ **[CD OUT] Jacks**
㊳ **Cord Holder**

DISPLAY SECTION



㊴ **[▬] Indicator**
Lights when the [DISPLAY] button is pressed to switch to the remaining no. of tracks/remaining disc playing time display mode.

㊵ **Time Indicator**
Shows either the elapsed track playing time or remaining disc playing time. When entering or checking memory contents, this indicator shows the memory program step number.

㊶ **[MEMORY] Indicator**
Flashes on and off while a memory play sequence is being entered or read out and remains lit when memory input has been completed and during memory disc play.

㊷ **[REPEAT] Indicator**
Lights during repeat disc play.

㊸ **TRACK NO. Indicator**
Shows either the number of the track currently being played or the remaining number of tracks on the disc.

㊹ **[M] Indicator**
Lights during memory disc play.

㊺ **[II] Indicator**
Flashes on and off when the pause mode is activated.

㊻ **[▷] Indicator**
Lights when a disc is being played.

2. DISASSEMBLY INSTRUCTIONS

FRONT CABINET REMOVAL

1. Open the cassette cover by pressing the STOP/EJECT buttons. (TAPE 1 and TAPE 2)
2. Remove sx screws Ⓐ and Ⓑ, and the front cabinet will be removed.

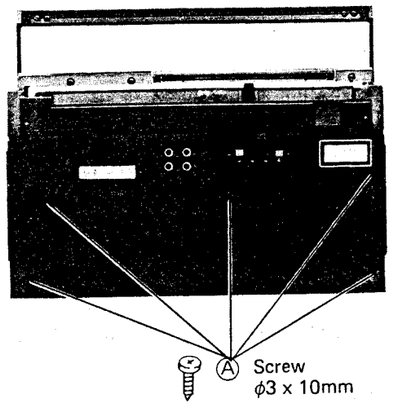


Figure 1

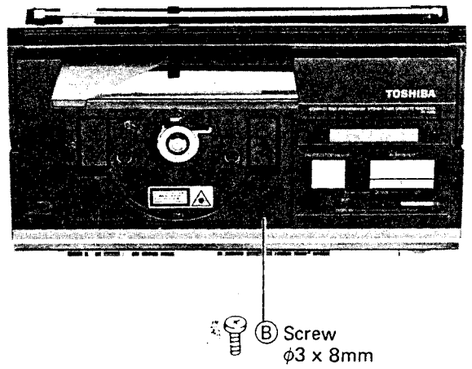


Figure 2

CD PLAYER UNIT REMOVAL

1. Remove six screws Ⓑ and Ⓒ, and the CD player unit will be removed.
2. Laser pickup and Main P.C. Board are connected by Flexible P.C. Board. Disconnect Main P.C. Board side.

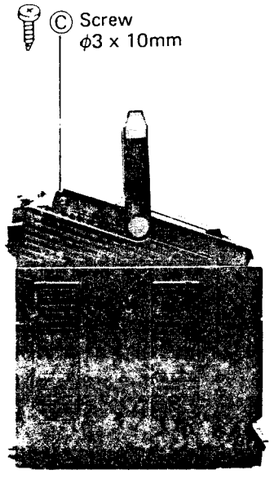


Figure 3

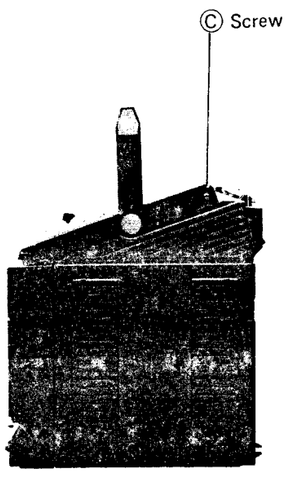


Figure 4

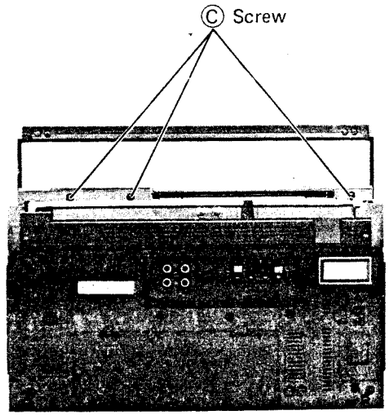


Figure 5

CD MECHANISM REMOVAL

1. Remove the CD player unit.
2. Remove four screws Ⓓ, and the CD mechanism will be removed.

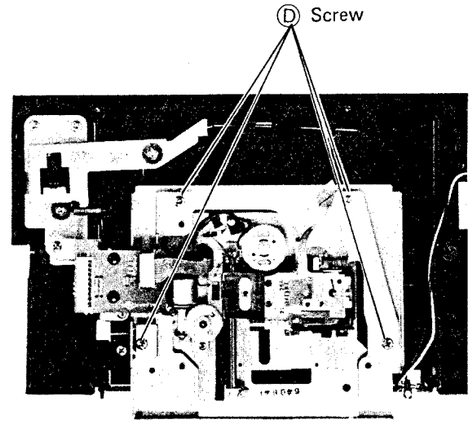


Figure 6

CASSETTE MECHANISM MOUNT REMOVAL

1. Remove the front cabinet.
2. Remove three screws Ⓔ, and the cassette mechanism mount will be removed. (TAPE 1 and TAPE 2)

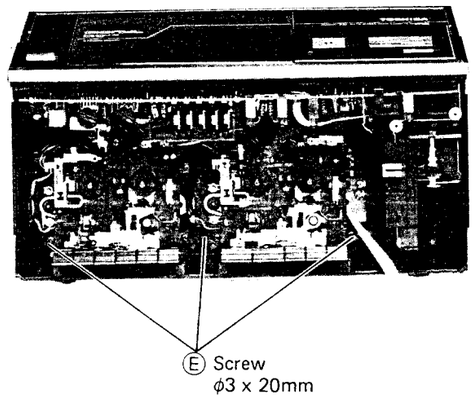


Figure 7

MAIN P.C. BOARD REMOVAL

1. Remove the front cabinet and CD player unit.
2. Remove the cassette mechanism . (TAPE 1 and TAPE 2).
3. Remove three screws Ⓕ from back cabinet, and the Main P.C. Board will be removed.

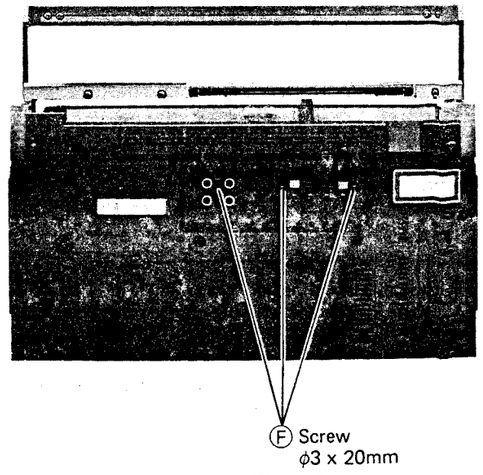
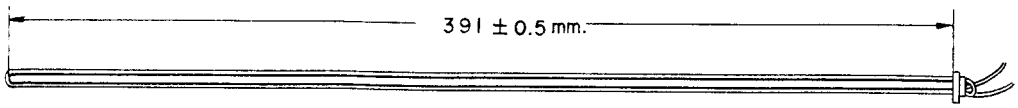


Figure 8

3. DIAL CORD RESTRINGING

1. Hook dial cord to drum spring as illustrated, and insert the cord end of threading cutout of dial drum.
2. Turn tuning capacitor counterclockwise fully. Proceed stringing in steps ① to ⑫ .
   Hook spring to drum.
   Note: When turning dial cord on the tuning shaft, make sure so that the cord is not overlapped each other.
3. Move dial pointer until lower edge of the pointer reaches stop boss provided on the frame.



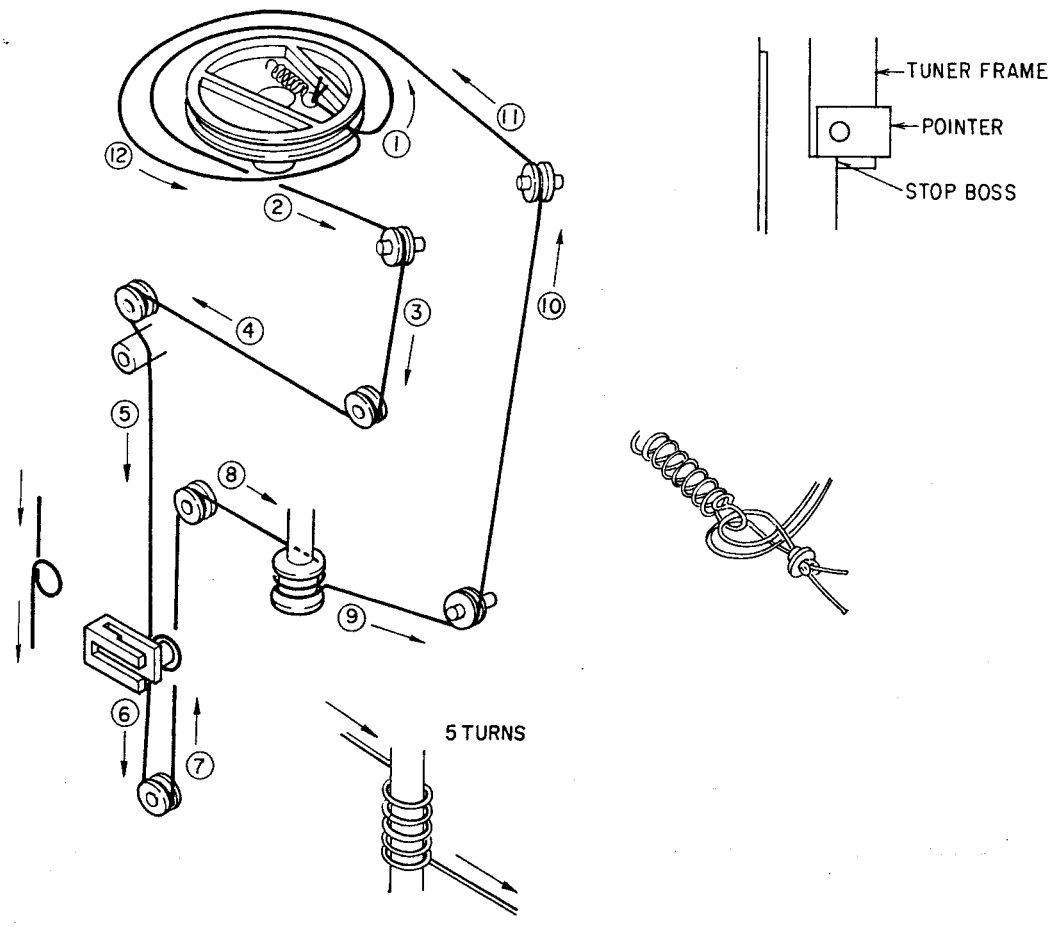


Figure 9

4. ADJUSTMENTS

CASSETTE MECHANISM SECTION

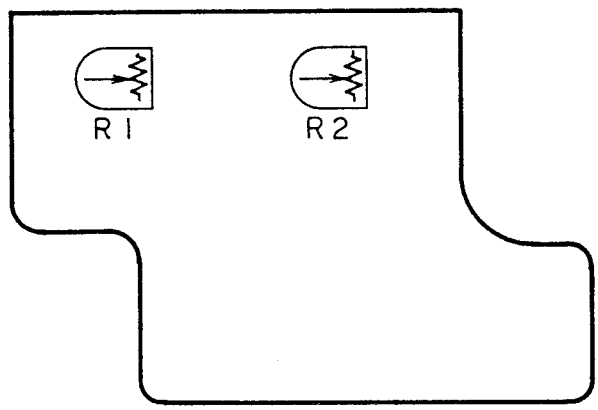


Figure 10

TAPE SPEED ADJUSTMENT
TEST TAPE ATT-111
1. PRELIMINARY WORK

1-1. Push the power switch ON.
1-2. Place the function switch in TAPE position.
1-3. Connect the output from the headphone jack to the frequency counter.
1-4. Load the decks TAPE 1 and 2 with ATT-111s. (Use A side only.)

2. ADJUSTMENT PROCEDURES (Adjust in the steps below.)

2-1. Press the play button of TAPE 1 and adjust R2 to obtain 3000 Hz ±20 Hz.
2-2. After adjustment is completed, stop the deck.
2-3. Press the play button of TAPE 2 and adjust R2 for the frequency counter to read within +0 Hz and −30 Hz from the value obtained in the adjustment (2-1).
2-4. After adjustment is completed, stop the deck.
2-5. Short-circuit Base and Emitter of Q1.
2-6. Press the play button of TAPE 1 and adjust R1 to obtain 6000 Hz ± 40 Hz.
2-7. After adjustment is completed, stop the deck.
2-8. Press the play button of TAPE 2 and adjust R1 for the frequency counter to read within +0 Hz and −60 Hz from the value obtained in the adjustment (2-6).
2-9. After adjustment is completed, stop the deck.

CAUTION:

1. The test should be performed with the test tapes wound at the same position (diameter).
2. Proceed the adjustments with the set positioned vertically. If not, tape speed will lowers.
3. Stabilized power source DC 15V should be used.
4. Before the adjustments, temporarily turn four semi-fixed resistors twice from minimum to maximum and vice versa to prevent the speed deviation due to instability of the semi-fixed resistors.
5. When making measurement, use the same tape to prevent speed difference (between different cassettes if used).

TUNER SECTION

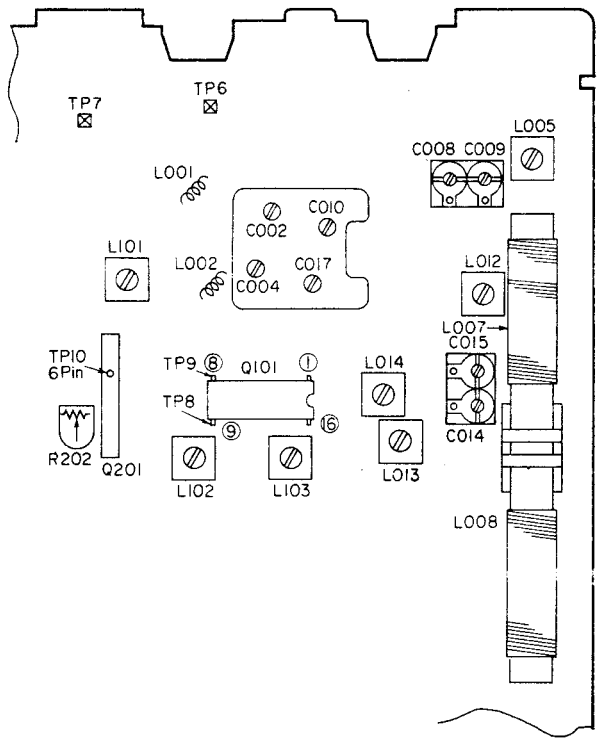


Figure 11

TEST EQUIPMENT

1. Signal generator with a frequency range of at least from 140 kHz to 18 MHz AM.
2. Oscilloscope with a side range amplifier of approximately 100 kHz.
3. Test loop – a coil of any size wire, one turn or more. (LW & MW)
4. A 30 ohm dummy antenna. (SW)
5. VTVM

AM ALIGNMENT

1. Turn on the AM signal generator and the VTVM allowing a fifteen-minute warm-up period.
2. Using the test loop across the output of the signal generator, inductively connect the signal generator to the radio.
3. Connect the VTVM across the phones jack.
4. Set signal generator frequency as listed in ALIGNMENT CHART and maintain a sufficient output level to provide an indication on VTVM.
5. Set volume control at mid-position.
6. Proceed as outlined in the IF-MW, LW and SW ALIGNMENT CHART.

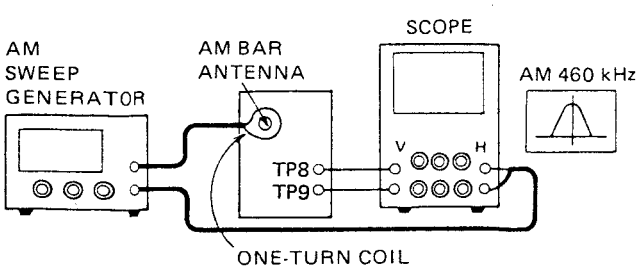


Figure 12

Note: 1. Use a screwdriver with plastic grip for all adjustments.
2. Standard test frequency 400 Hz and modulation 30% for AM.
3. Standard test frequency 400 Hz and deviation 22.5 kHz for FM.

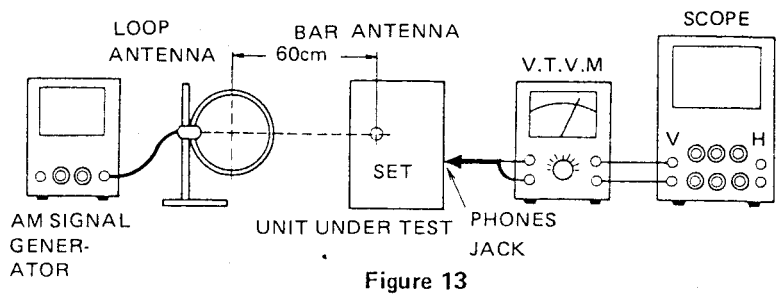


Figure 13

MW ALIGNMENT CHART (Figures 12 and 13)

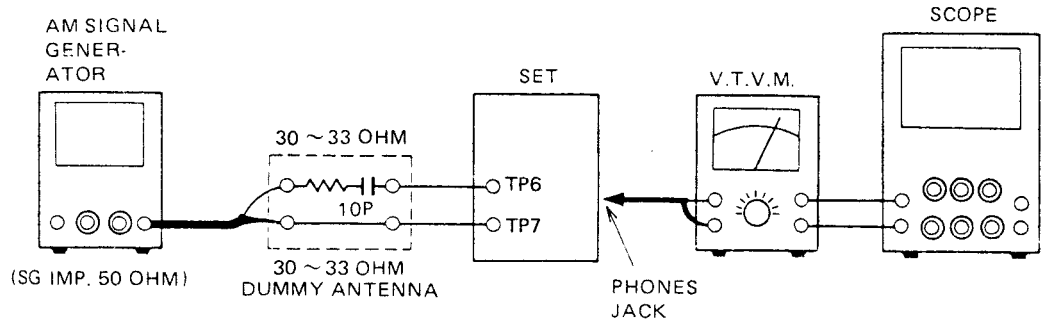
Band	Step	Signal Generator Frequency	Radio Dial Setting	Adjustment	Remarks
IF	1	460 kHz	Tuning Gang Fully Counter-clockwise (Lowest Frequency)	L103	Adjust for maximum indication.
MW	2	510 kHz	Tuning Gang Fully Counter-clockwise (Lowest Frequency)	Osc. Coil L014	Adjust for maximum indication.
	3	1650 kHz	Tuning Gang Fully Clockwise (Highest Frequency)	Osc. Trim. C017	Adjust for maximum indication.
	4	Repeat steps 2 and 3 as required.			
	5	600 kHz	Tune to Signal.	Ant. Coil L008	Adjust for maximum indication.
	6	1400 kHz	Tune to Signal.	Ant. Trim. C010	Adjust for maximum indication.
	7	Repeat steps 5 and 6 as required.			

LW ALIGNMENT CHART (Figure 13)

Band	Step	Signal Generator Frequency	Radio Dial Setting	Adjustment	Remarks
LW	1	142 kHz	Tuning Gang Fully Counter-clockwise (Lowest Frequency)	Osc. Coil L013	Adjust for maximum indication.
	2	290 kHz	Tuning Gang Fully Clockwise (Highest Frequency)	Osc. Trim. C015	Adjust for maximum indication.
	3	Repeat steps 1 and 2 as required.			
	4	160 kHz	Tune to Signal.	Ant. Coil L007	Adjust for maximum indication.
	5	290 kHz	Tune to Signal.	Ant. Trim. C008	Adjust for maximum indication.
	6	Repeat steps 4 and 5 as required.			

SW ALIGNMENT CHART (Figure 14)

Band	Step	Signal Generator Frequency	Radio Dial Setting	Adjustment	Remarks
SW	1	5.75 MHz	Tuning Gang Fully Counter-clockwise (Lowest Frequency)	Osc. Coil L012	Adjust for maximum indication.
	2	16 MHz	Tuning Gang Fully Clockwise (Highest Frequency)	Osc. Trim. C014	Adjust for maximum indication.
	3	Repeat steps 1 and 2 as required.			
	4	6.5 MHz	Tune to Signal.	Ant. Coil L005	Adjust for maximum indication.
	5	14 MHz	Tune to Signal.	Ant. Trim. C009	Adjust for maximum indication.
	6	Repeat steps 4 and 5 as required.			



Fiugre 14

FM-IF ALIGNMENT

1. Set the select switch to FM position.
2. Turn on both sweep generator and oscilloscope, and allow a fifteen-minute warm-up period.
3. Connect the RF SWEEP SIGNAL OUTPUT from the signal generator through the loop antenna to the receiver.
4. Connect the oscilloscope vertical input directly to the test point TP8 and connect the shielded lead to the test point TP9 or chassis ground.
5. Connect the SWEEP VOLTAGE OUTPUT of the sweep generator to the oscilloscope.
6. Proceed as outlined in the FM-IF ALIGNMENT CHART.

FM-IF ALIGNMENT CHART (Figure 15)

Step	Signal coupling	Equip.	Tuning	Connection	Adjust. point	Pattern
1	Connect sweep generator output to a three-turn loop antenna of 3 cm diameter.	Sweep generator of 10.7 MHz center freq. with 10.7 MHz marker.	Tuning Knob fully counter-clockwise (Lowest Frequency.)	Set scope for connecting output signal from TUN OUT to vertical axis of scope "V" and sweep generator output to horizontal axis "H".	L101 L102	Turn the IF Transformer L102 fully counterclockwise to obtain a single peak. Adjust coil L101 in order until the best single peak is obtained. Figure 16. Finally turn the Coil L102 to obtain S curve. See Figure 17.

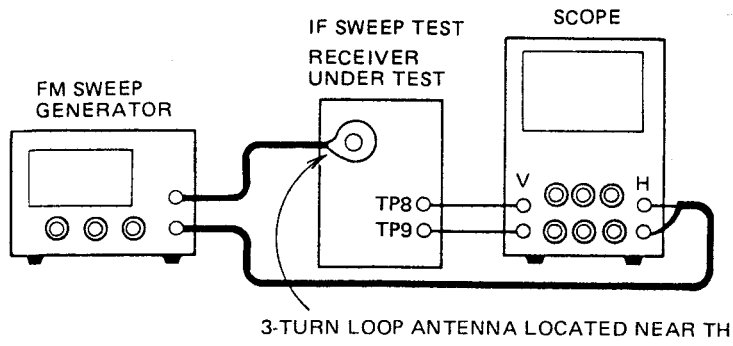


Figure 15

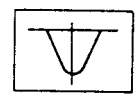


Figure 16

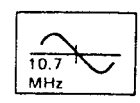


Figure 17

CAUTION:
When realigning the FM Receiving Frequency, the highest end of the frequency range should not be more than 108 MHz and the lowest end of the frequency range should not be less than 87.5 MHz, in order to comply with FTZ regulations in West Germany.

FM-RF ALIGNMENT

1. Turn on the signal generator and the VTVM, and allow a fifteen-minute warm-up period.
2. Connect the signal generator output through a 75 ohm dummy antenna across FM ANT.
3. Connect the VTVM across the headphone jack.
4. Set the volume control to mid-position.
5. Adjust the signal generator frequency as indicated in FM-RF ALIGNMENT CHART, and maintain a sufficient signal output level to provide a measurable indication.
6. Proceed as outlined in the FM-RF ALIGNMENT CHART.

FM-RF ALIGNMENT CHART (Figure 18)

Step	Signal Generator	Radio Dial Setting	Adjustment	Remarks
1	87.5 MHz	Tuning Knob Fully Counter-clockwise (Lowest Frequency)	Osc. Coil L002	Adjust for maximum output indication.
2	108 MHz	Tuning Knob Fully Clockwise (Highest Frequency)	Osc. Trim. C004	Adjust for maximum output indication.
3	Repeat steps 1 and 2 as required.			
4	90 MHz	Tune to signal	Ant. Coil L001	Adjust for maximum output indication.
5	106 MHz		Ant. Trim. C002	
6	Repeat steps 4 and 5 as required.			

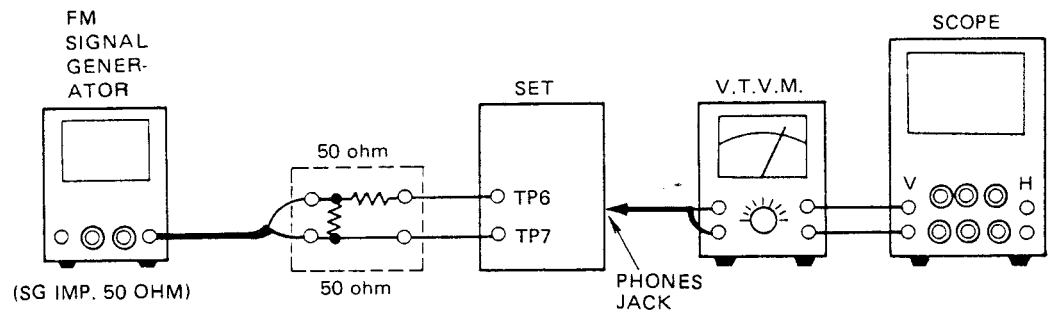


Figure 18

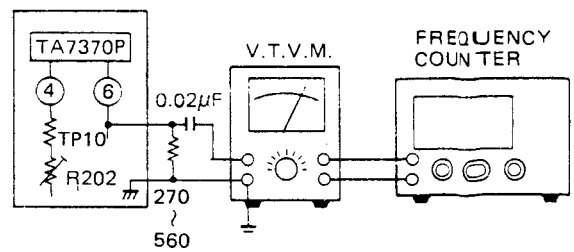


Figure 19

FREE RUN FREQUENCY ALIGNMENT

Adjust R202 under no signal condition so as to obtain 38kHz ± 75 Hz. (Figure 19)

RECORD/PLAYBACK HEAD ADJUSTMENT

A 6.3 kHz standard tape must be used for this adjustment. Connect a VTVM or an oscilloscope to the headphone jack and adjust the azimuth by using a phillips screwdriver to maintain the maximum output voltage.

TAKE-UP/ SUPPLY REEL TENSION

1. Insert cassette torque meter (HARTAK X-87 Torquette).
2. Press PLAY button and read torque meter. Torque should be 30 to 60 gcm.
3. Release PLAY button and press REWIND button, Torque should be 75 to 150 gcm. If necessary, clean take-up reel or drive belt with alcohol, or replace belt.

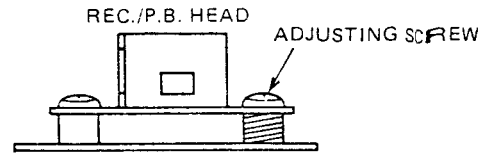


Figure 20

CD PLAYER SECTION

PICKUP REPLACEMENT AND ADJUSTMENTS

PICKUP REPLACEMENT

Caution on Replacement:
A laser diode mounted inside a pickup is very susceptible to external static electricity. Though it will operate right after replacement or its life may be shortened. When replacing, use conductive gum mat, soldering iron with ground wire, etc. to protect the laser diode from damage by static electricity.

1. Remove front cabinet, CD player unit, cassette mechanism ass'y and Main P.C. Board referring to Disassembly Instructions.

2. Remove gear Ⓐ and Ⓑ assembly shown in Figure 21 by removing one washer.

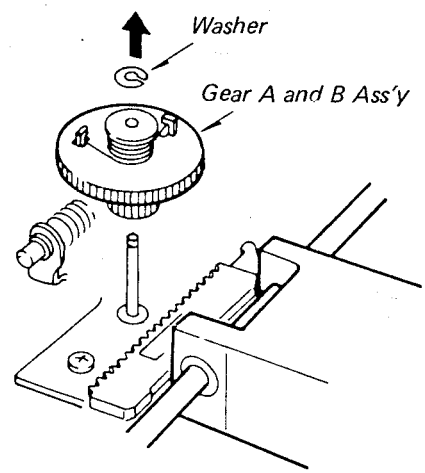


Figure 21

3. Remove two screws fixing guide shaft and disconnect Main P.C. Board side socket from Flexible P.C. Board attached to pickup.
When replacing pickup and Flexible P.C. Board mounted to pickup motor, remove two screws fixing pickup motor.

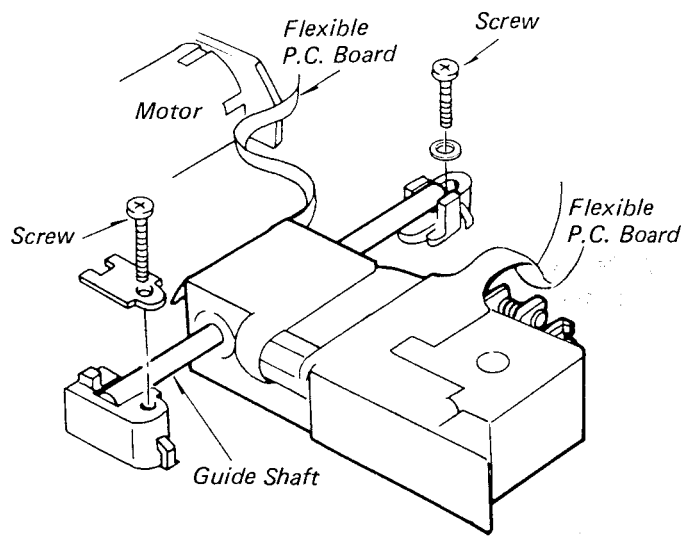


Figure 22

4. Insert shorting pin, which is one of repair parts, into pickup to be removed. (Figure 23)

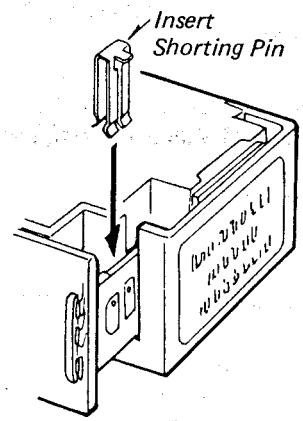


Figure 23

5. Lift up guide shaft side of the pickup slightly and position pickup height adjusting lever to mechanism chassis cutout. Then remove the guide lever by pulling it in the guide shaft side. (Refer to Figure 24)

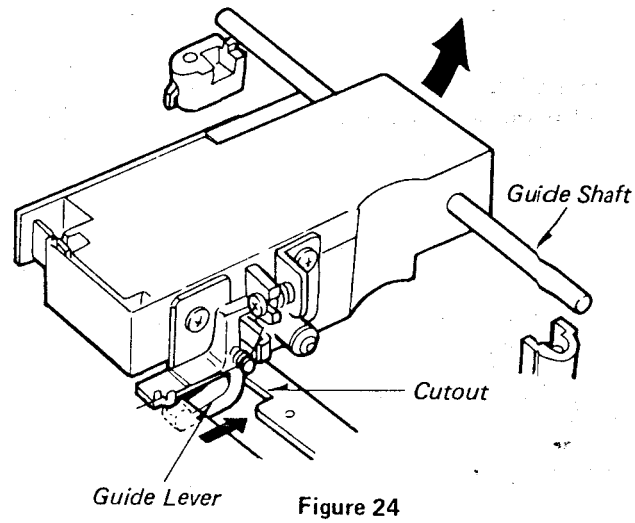


Figure 24

6. Desolder terminals of the APC P.C. Board (fixed with double sided adhesive tape) and remove the P.C. Board. (Figure 25)

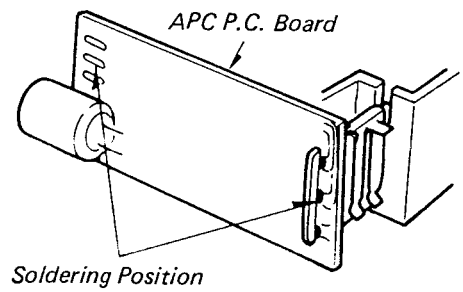


Figure 25

7. Remove rack gear by removing two screws fixing it. (Figure 26)

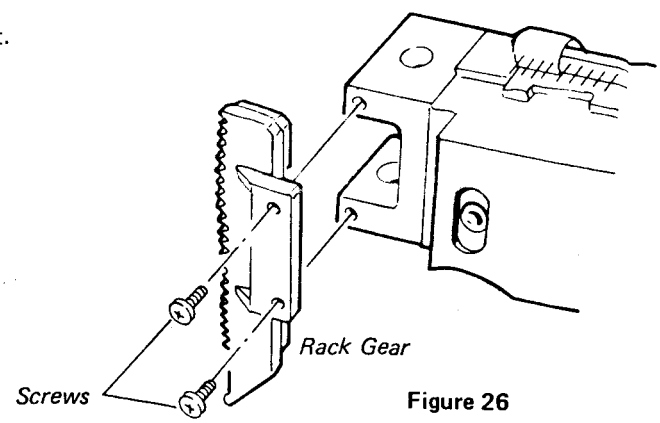


Figure 26

8. Remove pickup adjustment lever by removing two screws fixing it. (Figure 27)

9. Assemble pickup up to the steps required for laser power coarse adjustment.
   1) Assembly pickup adjustment lever, rack gear, APC P.C. Board, and Flexible P.C. Board of APC P.C. Board. After assemblying APC P.C. Board, remove shorting pin.
   2) After laser power adjustment is completed, install the pickup on mechanism.

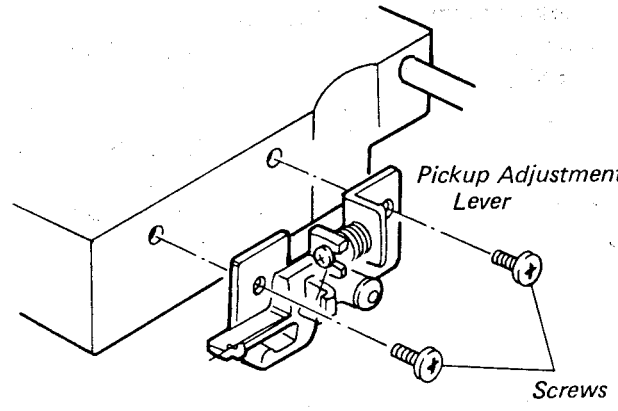


Figure 27

ADJUSTMENT PROCEDURES

1 ADJUSTMENT LOCATIONS

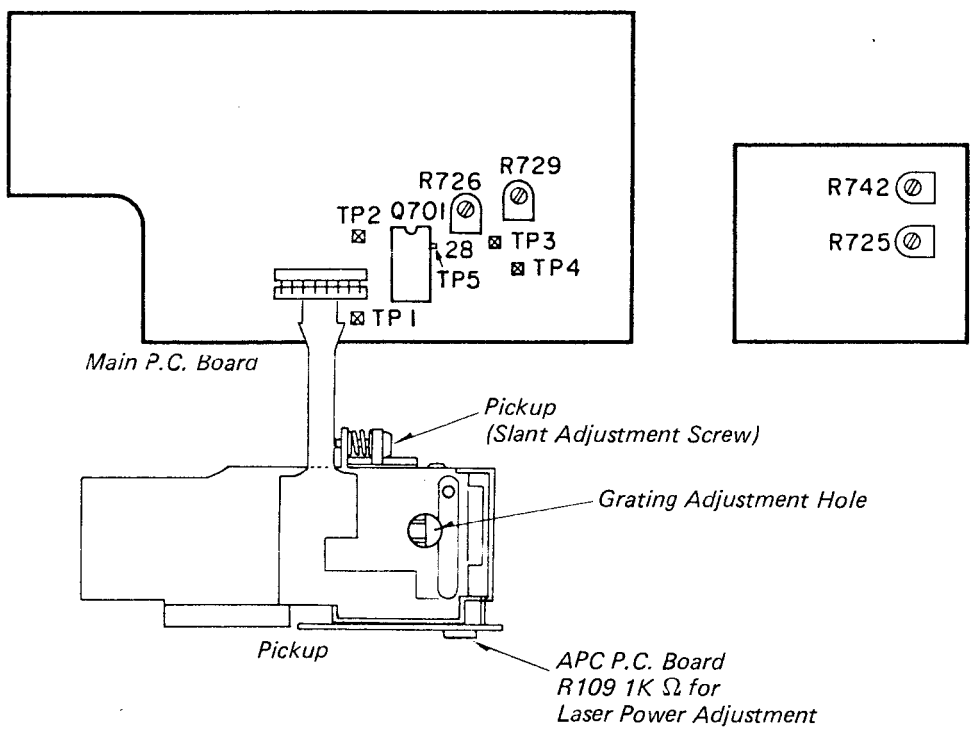


Figure 28

2 LASER POWER COARSE ADJUSTMENT

(Perform following adjustment before installing pickup to mechanism.)

1. **Note:** R109 1K ohm laser power adjustment VR on APC P.C. Board should not be turned before the adjustment is completed.
2. Connect Main P.C. Board and pickup Flexible P.C. Board with two wire leads temporarily. (Figure 29)
   Note: Shorting pin should be removed from pickup.
3. Set unit to ON.
   Adjust R109 APC adjustment VR on APC P.C. Board so that meter indicates 150μW with laser power meter sensor applied to pickup lens. (Figures 30 and 31.
4. After laser power coarse adjustment is completed, install pickup on mechanism and connect Flexible P.C. Board to Main P.C. Board.

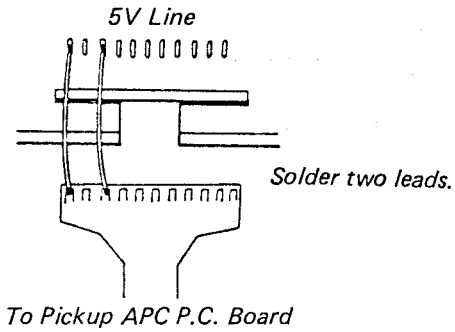


Figure 29

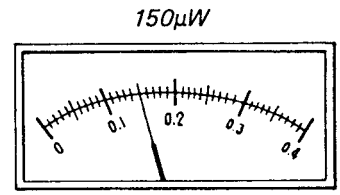


Figure 30

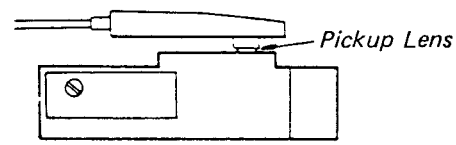


Figure 31

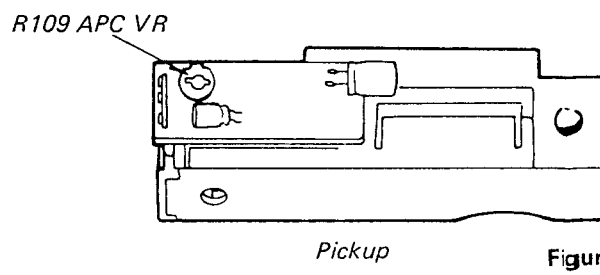


Figure 32

3 TRACKING ERROR BALANCE COARSE ADJUSTMENT

1. Connect oscilloscope to TP3 and TP4 of Q701 SERVO IC. (Figure 33)
2. Set test disc YEDS-7 in tray.
3. Set power of unit to ON. Hold pickup drive motor warm gear with your hand to stop its rotation while the unit is searching first music.

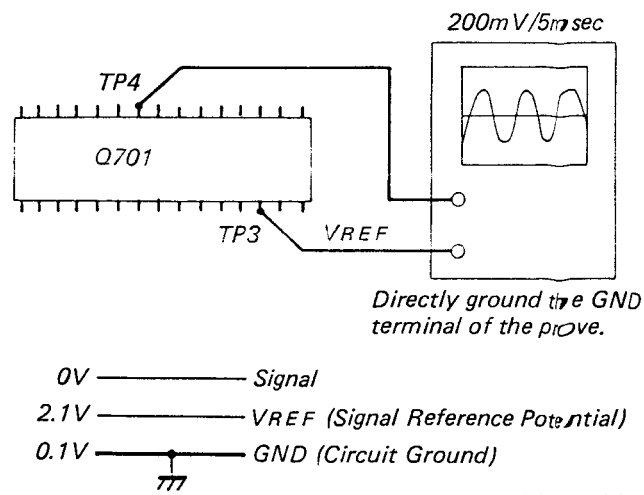


Figure 33

4. Adjust R742 100K ohm TE BAL VR so that tracking error signal waveform obtains ±10mV with UP key pushed. (Figure 34)
   Once UP key is pushed, it allows operation for about 20 seconds. If the operation stops, push the UP key again.

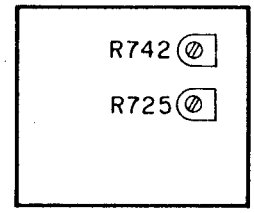


Figure 34

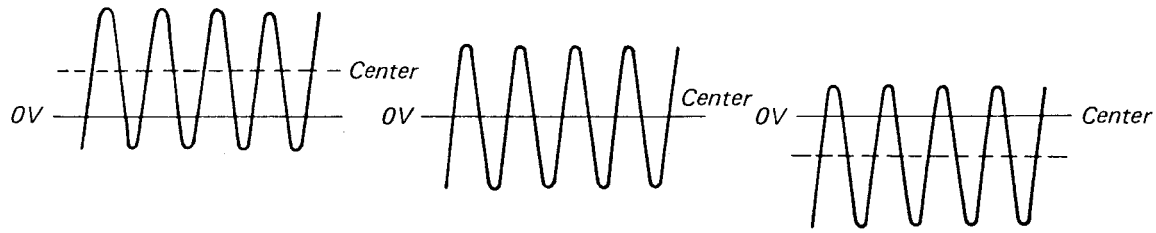


Figure 35

4 PICKUP SLANT ADJUSTMENT

1. Connect oscilloscope to TP1 and TP3 of Q701 SERVO IC. (Figure 36)
2. Set test disc YEDS-7 to play mode.
3. Adjust pickup slant adjustment screw so that center part of RF signal (eye pattern) is clear.
4. When the adjustment is completed, apply screw lock to the slant adjustment screw. (Figure 37)

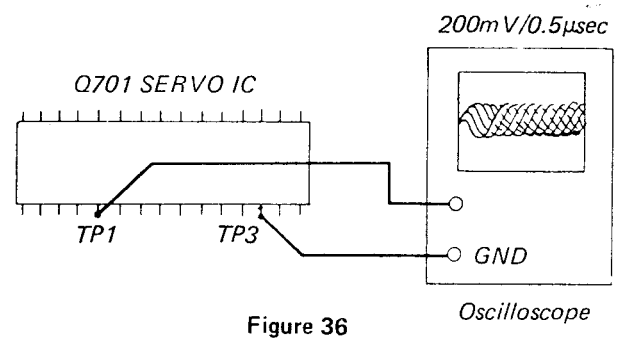


Figure 36

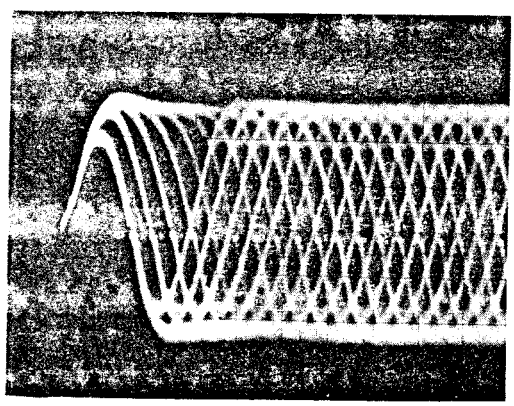


Photo 1 RF Signal (Eye Pattern)

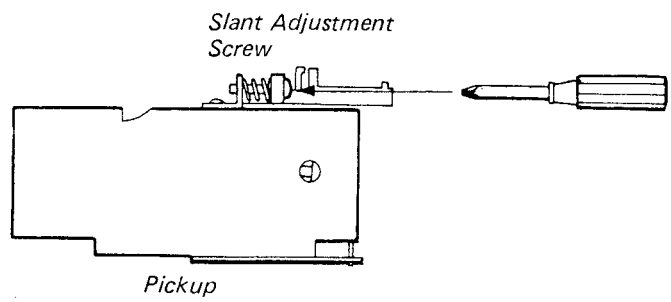


Figure 37

☆ **When pickup diffraction grating adjustment is required.**

1. Connect oscilloscope to TP3 and TP4 of Q701. (Figure 38)
2. Search 12 pieces of test disc YEDS-7.
3. Hold warm gear of drive motor with your hand to stop its rotation.
4. Insert eccentric adjustment driver into grating adjustment hole and turn the driver carefully (slowly) with UP key pushed until tracking error waveform (TE level) reaches max. amplitude.
5. Search track No. 1 and check that level difference to track No. 12 is within 10%.

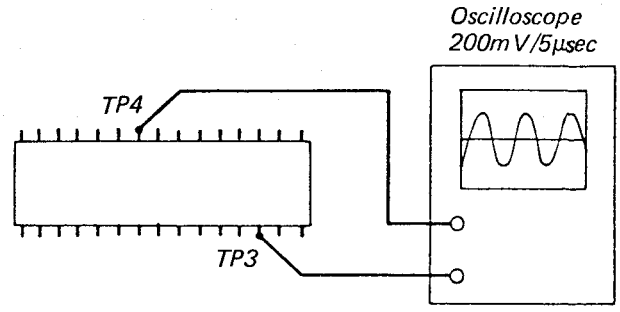


Figure 38

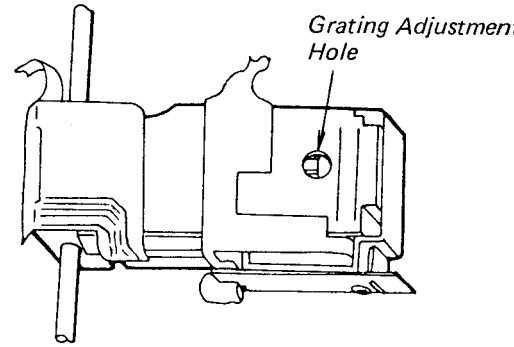


Figure 39

Note: When turning the eccentric adjustment driver, observe the blade mounted on the drive as a reference. The rotating angle is very fine, like an angle of a razor blade. Eccentric adjustment part No.: 22999837

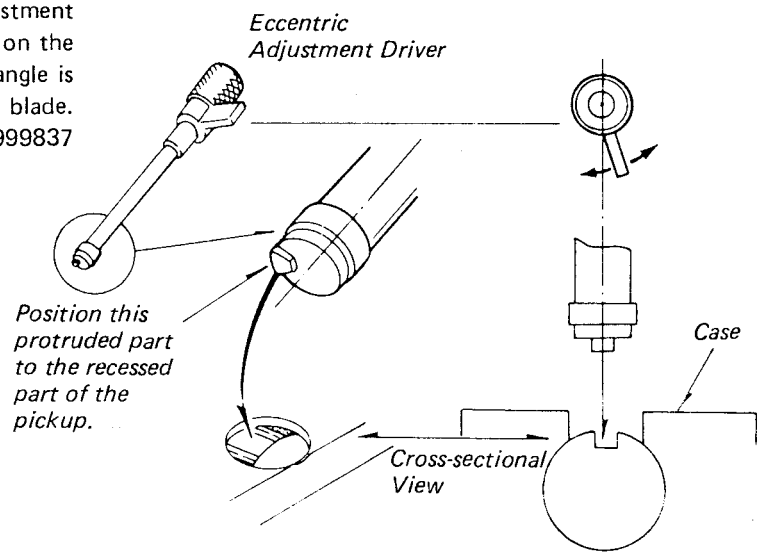


Figure 40

5 FOCUS ERROR BALANCE ADJUSTMENT

1. Connect oscilloscope to TP1 and TP3 of Q701 SERVO IC. (Figure 41)
2. Adjust R725 focus error balance VR so that RF signal (eye pattern) is clear with test disc YEDS-7 played back.
   Refer to photo of pickup slant adjustment for waveform. (See Photo 1)

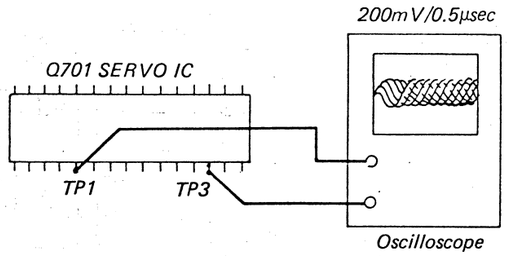


Figure 41

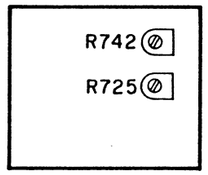


Figure 42

6 APC VR (LASER POWER FINE ADJUSTMENT)

1. Connect oscilloscope to TP1 and TP3 of Q701 SERVO IC. (Figure 43)
2. Play back test disc YEDS-7.
3. Adjust R109 APC VR so that RF signal obtains 1Vp-p. (Photo 1)

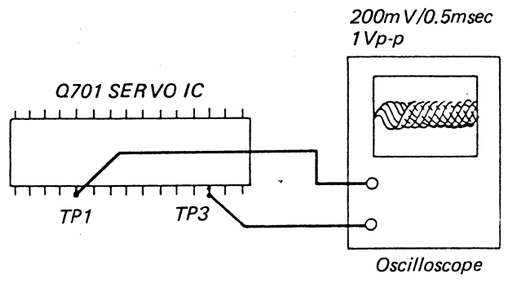


Figure 43

7 TRACKING ERROR BALANCE FINE ADJUSTMENT

1. Proceed adjustment of item 3 Tracking error balance adjustment again.

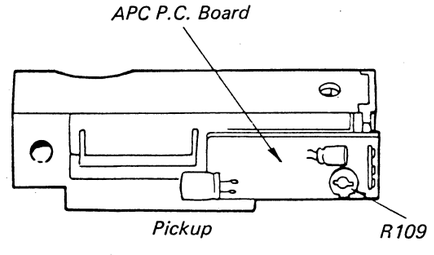


Figure 44

8 THE OTHER ADJUSTMENT

(Tracking and focus error offset adjustment)
This adjustment is proceeded mainly when Q701 SERVO IC is replaced. This adjustment is not needed in pickup replacement. Check after adjustment of item 2 is completed.

* Check after pickup is assembled completely.

1. Connect oscilloscope to Q701 SERVO IC. (Figure 45)
   For tracking error offset adjustment and check: TP4
   For focus error offset adjustment and check: TP5
2. Connect filter circuit shown in Figure 45 across Q701 and oscilloscope.
3. Set power of unit to ON. Adjust each R729, R726 so that 0V ±10mV is obtained with unit set to STOP mode. (Figure 28)

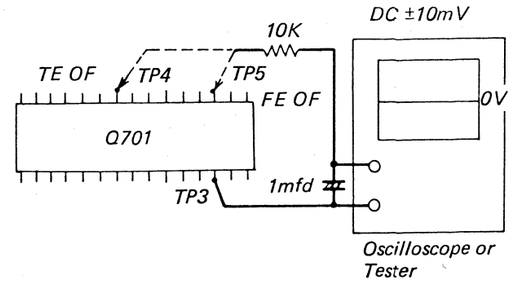
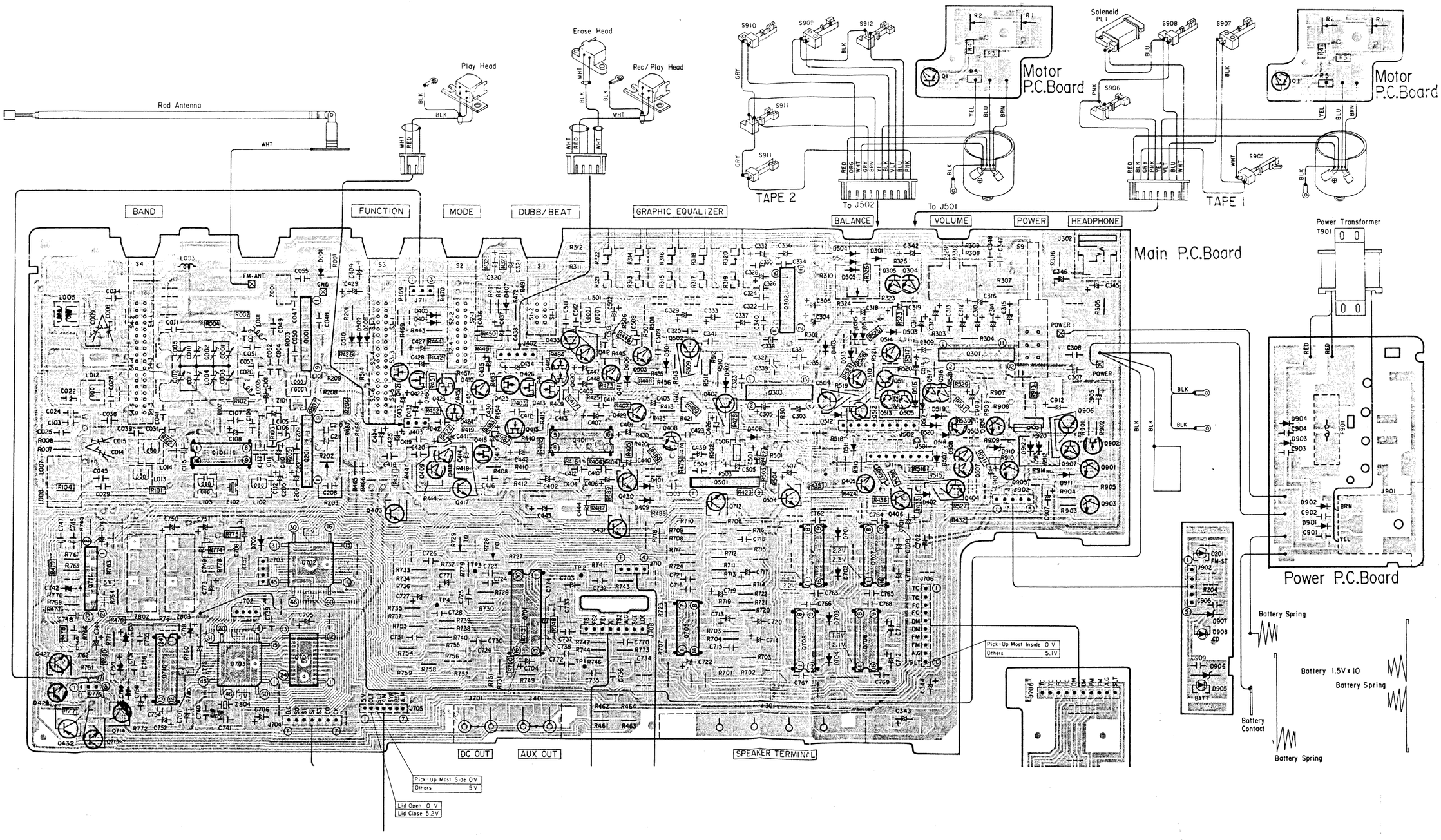


Figure 45

5. ELECTRICAL PARTS LOCATIONS

TUNER AND AMP. SECTION



Q001

1	0.7V
2	4.4V
3	3.9V
4	4.4V
5	0 V
6	5.0V
7	0.4V
8	0 V
9	5.0V

Q101

	FM	AM
1		
2		
3	1.5V	1.6V
4	1.5V	1.6V
5	0.3V	0.4V
6	0.4V	0.8V
7	0 V	0 V
8	0 V	0 V
9	0.9V	1.3V
10	4.1V	5.9V
11	4.1V	5.9V
12	4 V	5.9V
13	1.1V	1.1V
14	4.1V	5.9V
15	4.1V	0.2V
16	4 V	0 V

Q201

	FM	AM
1	0.2V	0.2V
2	2.6V	1.4V
3	4	5.0V
4	4.1V	5.9V
5		0 V
6		3V
7	3.6V	5.9V
8	0.9V	0.9V
9	0.9V	0.9V

Q301

1	6 V
2	0.7V
3	0 V
4	0 V
5	0.7V
6	7.6V
7	0 V
8	0 V
9	6.5V
10	6.5V
11	14.7V
12	7.6V

Q302, 303

1	4.6V
2	3.3V
3	3.9V
4	3.9V
5	1.9V
6	7.8V
7	4.6V
8	0V
9	4.6V
10	4.7V
11	4.6V
12	3.3V
13	4.6V
14	3.3V
15	4.6V
16	3.3V

Q304, 305

E	0 V
C	0 V
B	0.7V

Q401

1	0V
2	7.6V
3	0V
4	3.0V
5	1.3V
6	1.3V
7	0V
8	Tape 0V Others 0.9V
9	0V
10	0V
11	1.3V
12	1.3V
13	3.0V
14	0V
15	1.3V
16	7.7V

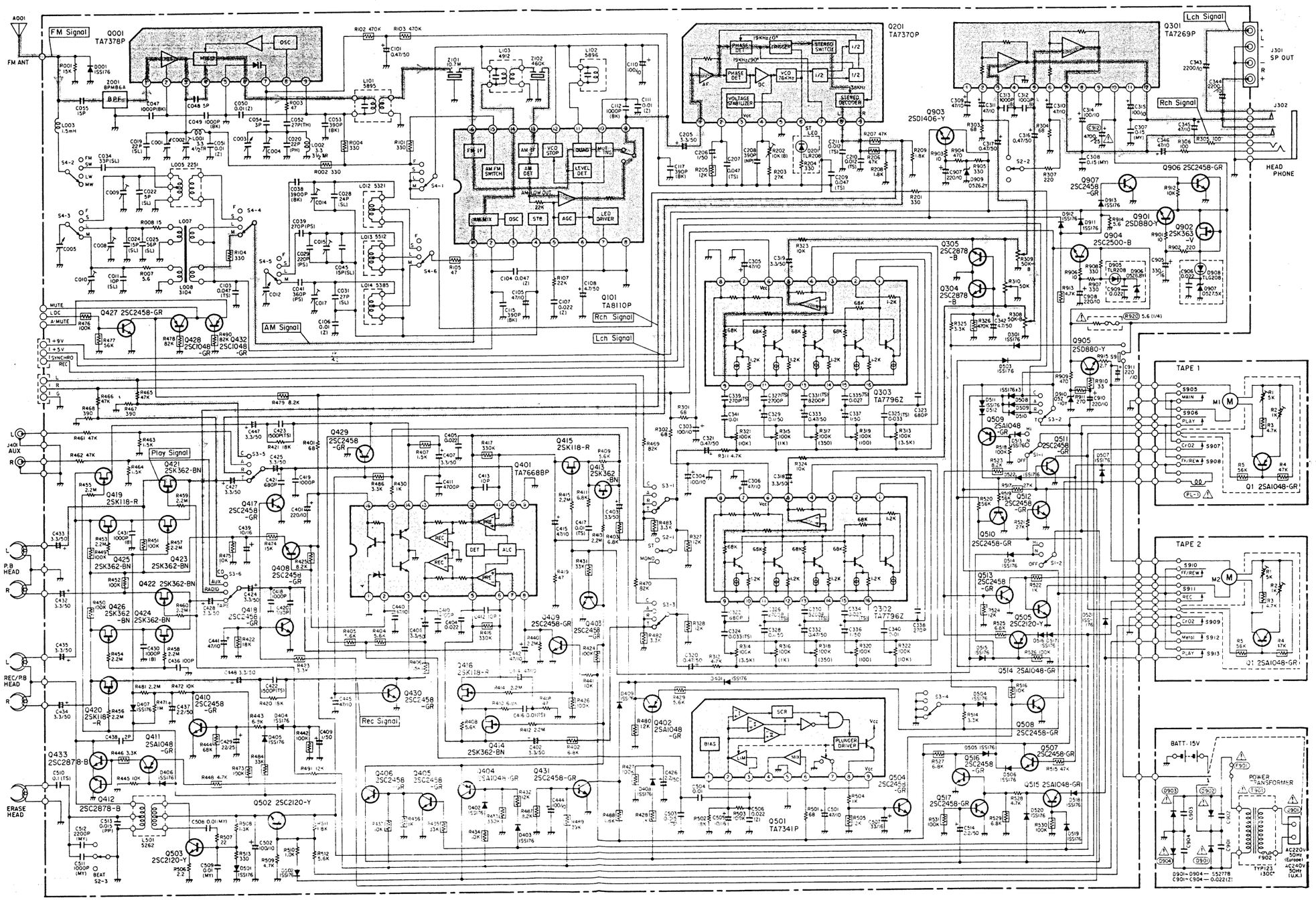
Q402

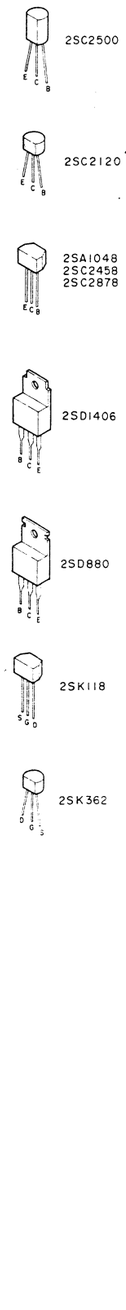
	REC	Others
E	8.2V	2.6V
C	0V	2.6V
B	7.5V	1.9V

Q403

	Tape	Others
E	0 V	0 V
C	—	0 V
B	0 V	0.7V

6. SCHEMATIC DIAGRAM





Q404

	Normal	CrO2/ Metal
E	0.7V	6.3V
C	0V	6.3V
B	0V	5.7V

Q405

	High Speed Dubb	Others
E	0V	0V
C	0V	—
B	0.7V	0V

Q406

	Normal	CrO2/ Metal
E	0V	—
C	0V	6.3V
B	0.6V	0.6V

Q408

E	7.0V
C	7.7V
B	7.6V

Q409

	Tape	Others
E	0V	0V
C	0V	0.9V
B	0.7V	0V

Q410

	Tape I REC / Play	Others
E	0V	0V
C	0V	3.9V
B	0.7V	0V

Q411

	REC	Others
E	7.4V	2.0V
C	—	2.0V
B	7.5V	1.3V

Q413, 414

	Tape Play Normal	CrO2/ Metal
D	1.3V	1.3V
G	0V	1.9V
S	1.3V	1.3V

Q415, 416

	Tape	Others
D	1.3V	1.3V
G	0V	1.8V
S	1.3V	1.3V

Q417, 418

	High Speed Dubb	Others
E	0V	0V
C	0V	0V
B	0V	0.6V

Q419, 420

	REC	Others
D	3.0V	3.0V
G	3.0V	0V
S	3.0V	0.8V

Q421, 422

	Tape I Play	Others
D	3.0V	3.0V
G	3.0V	0V
S	3.0V	0V

Q423, 424, 425, 426

	Tape I Play	Others
D	3.0V	3.0V
G	0V	3.0V
S	0V	3.0V

Q427

	CD Play	Others
E	0V	0V
C	0V	3.9V
B	0.7V	0V

Q428

	CD Play	Others
E	0V	3.9V
C	0V	3.9V
B	0V	3.2V

Q429, 430

	REC	Others
E	0V	0V
C	—	—
B	0V	0.7V

Q431

	Tape I Play	Others
E	0V	0V
C	0V	3.0V
B	0.7V	0V

Q432

	CD Play	Others
E	0V	3.9V
C	0V	3.9V
B	0V	3.2V

Q502

	REC Normal	CrO2	Metal
E	2.4V	3.7V	4.4V
C	8.0V	8.0V	8.0V
B	3.0V	4.3V	5.0V

Q504

	Tape M O	
	ON	OFF
E	0V	0V
C	0V	0.7V
B	0.7V	0V

Q505

E	0V
C	0V
B	0.7V

Q507

	Tape I M O
E	6.8V
C	8.2V
B	7.5V

Q508

	M O ON
E	0V
C	0V
B	0.7V

Q509

	High Speed	
	ON	OFF
E	7.2V	7.2V
C	0V	7.2V
B	7.5V	6.5V

Q510

	High Speed	
	ON	OFF
E	0V	0V
C	3.0V	0V
B	0V	0.7V

Q511

	Normal	High Speed
E	0V	0V
C	0V	8.0V
B	0.7V	0V

Q512

	Normal	High Speed
E	0V	0V
C	0.7V	0V
B	0V	0.7V

Q513

	Tape 2 Stand By	
	ON	OFF
E	0V	0V
C	0V	0.7V
B	0.7V	0V

Q514

	REC Start	
	ON	OFF
E	7.5V	7.5V
C	7.5V	7.5V
B	6.9V	0V

Q515

	Tape 2	
	Play	REC
E	7.6V	7.6V
C	7.6V	0V
B	1.3V	1.3V

Q516

	Tape Play	Others (Tape)
E	0V	0V
C	0V	3.5V
B	0.7V	0V

Q901

E	8.5V
C	15.0V
B	9.2V

Q902

D	15.0V
G	9.2V
S	9.2V

Q903

E	5.1V
C	8.5V
B	5.8V

Q904

E	8.2V
C	14.7V
B	8.8V

Q905

E	9.3V
C	14.7V
B	9.7V

Q906

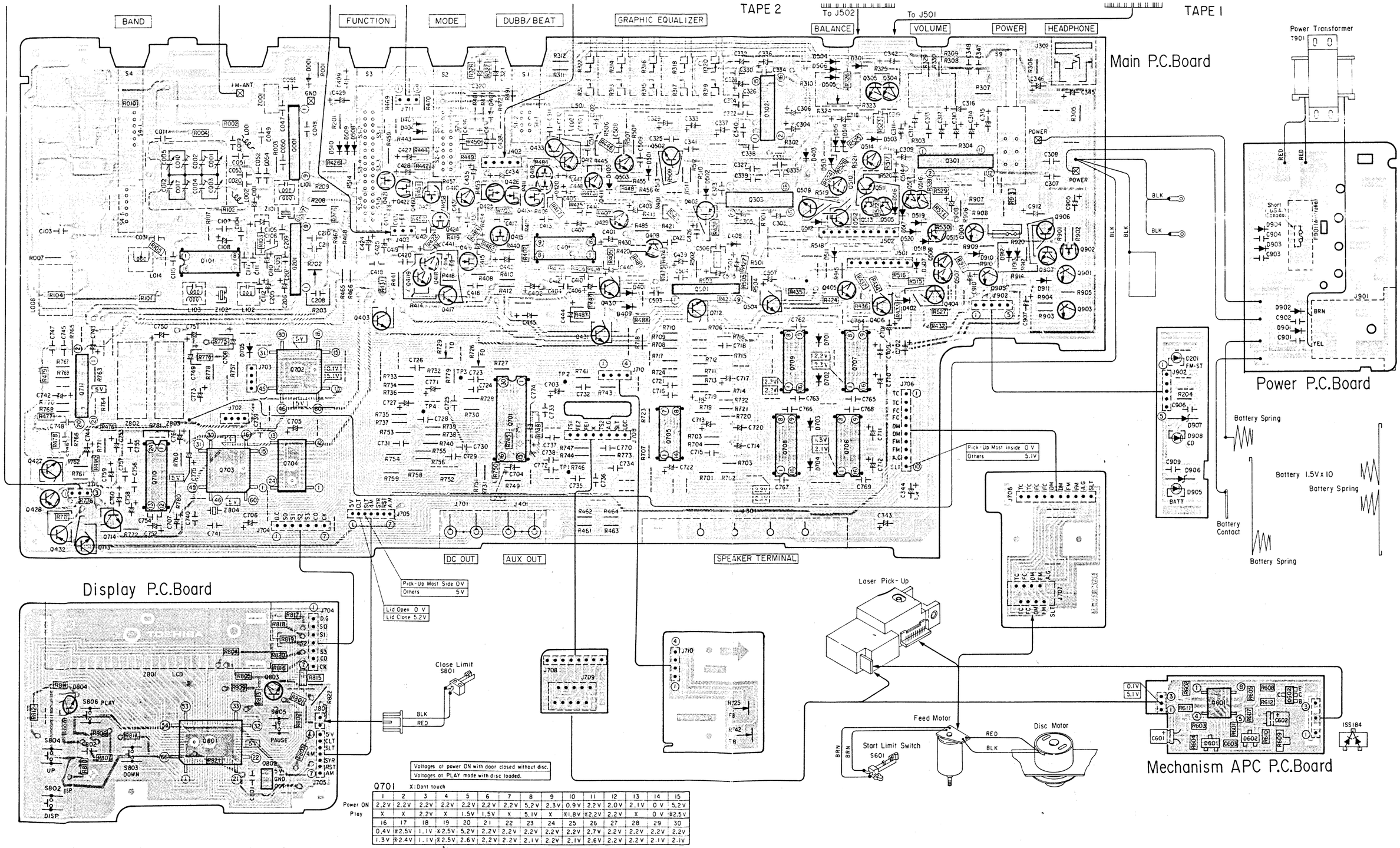
	CD	Others
E	0V	0V
C	9.2V	0V
B	0V	0.7V

Q907

	CD	Others
E	0V	0V
C	0V	0.7V
B	0.7V	0V

CAUTION:
The ⚠ mark, the Location No. circled with oval in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

7. ELECTRICAL PARTS LOCATIONS

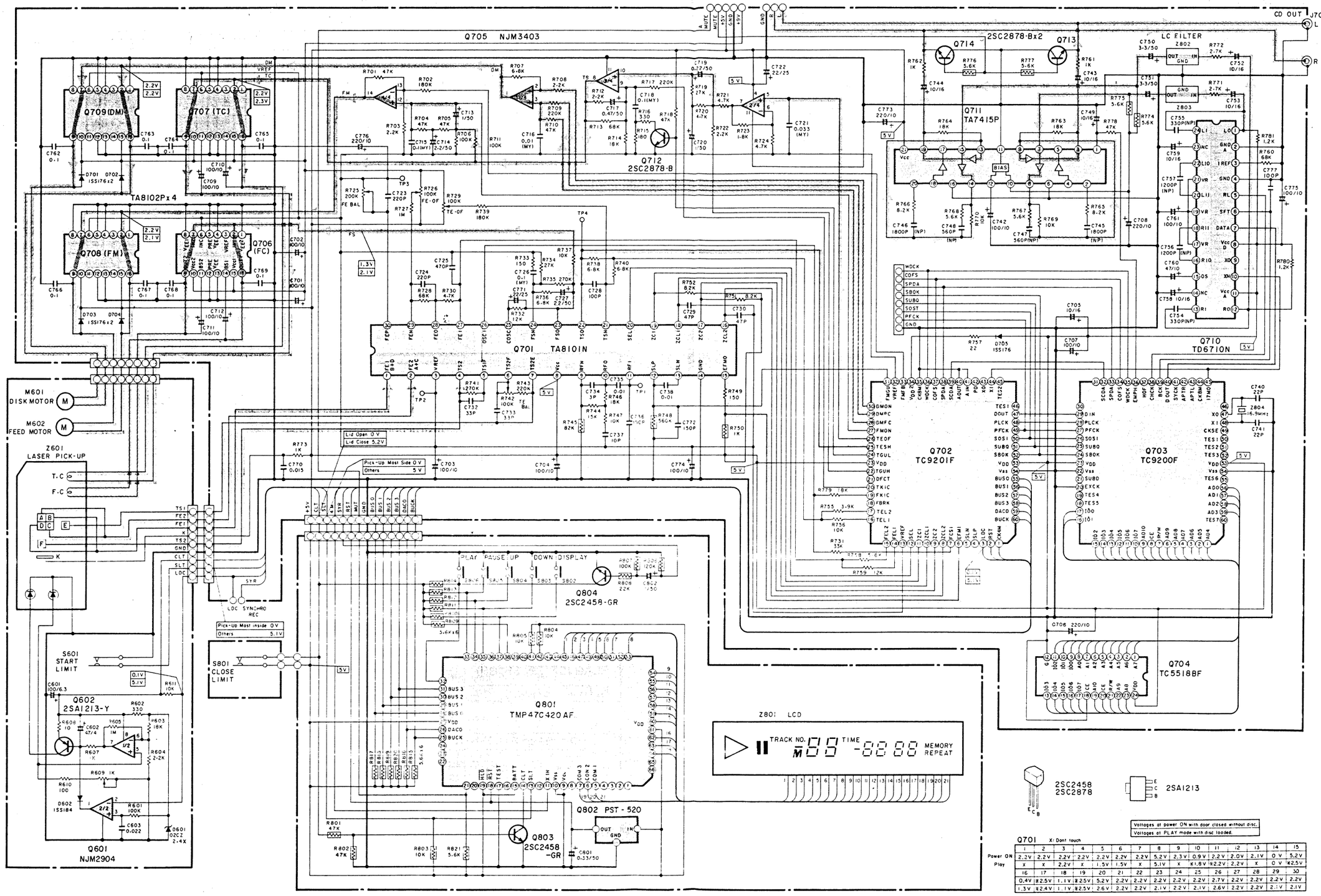


Q701 X:Dont touch

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Power ON	2.2V	2.2V	2.2V	2.2V	2.2V	2.2V	2.2V	5.2V	2.3V	0.9V	2.2V	2.0V	2.1V	0 V	5.2V
Play	X	X	2.2V	X	1.5V	1.5V	X	5.1V	X	X1.8V	X2.2V	2.2V	X	0 V	X2.5V

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
0.4V	X2.5V	1.1V	X2.5V	5.2V	2.2V	2.2V	2.2V	2.2V	2.2V	2.7V	2.2V	2.2V	2.2V	2.2V
1.3V	X2.4V	1.1V	X2.5V	2.6V	2.2V	2.2V	2.1V	2.2V	2.1V	2.6V	2.2V	2.2V	2.1V	2.1V

8. SCHEMATIC DIAGRAM



Voltages at power ON with door closed without disc.
Voltages at PLAY mode with disc loaded.

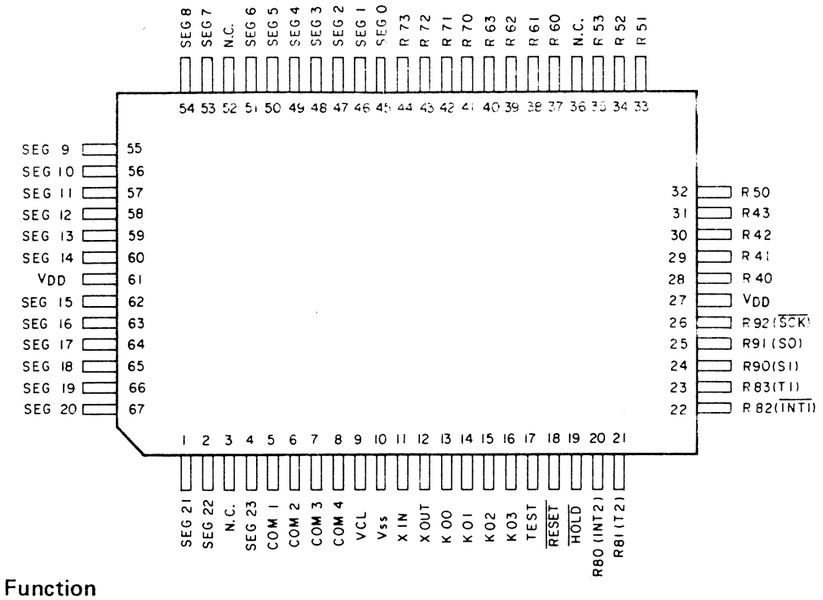
Q701 X: Dont touch

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Power ON	2.2V	2.2V	2.2V	2.2V	2.2V	2.2V	2.2V	5.2V	2.3V	0.9V	2.2V	2.0V	2.1V	0 V	5.2V
Play	X	X	2.2V	X	1.5V	1.5V	X	5.1V	X	K1.8V	⁂2.2V	2.2V	X	0 V	⁂2.5V

	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	0.4V	⁂2.5V	1.1V	⁂2.5V	5.2V	2.2V	2.2V	2.2V	2.2V	2.2V	2.7V	2.2V	2.2V	2.2V	2.2V
	1.3V	⁂2.4V	1.1V	⁂2.5V	2.6V	2.2V	2.2V	2.1V	2.2V	2.1V	2.6V	2.2V	2.2V	2.1V	2.1V

9. IC BLOCK DIAGRAM AND TERMINAL FUNCTION

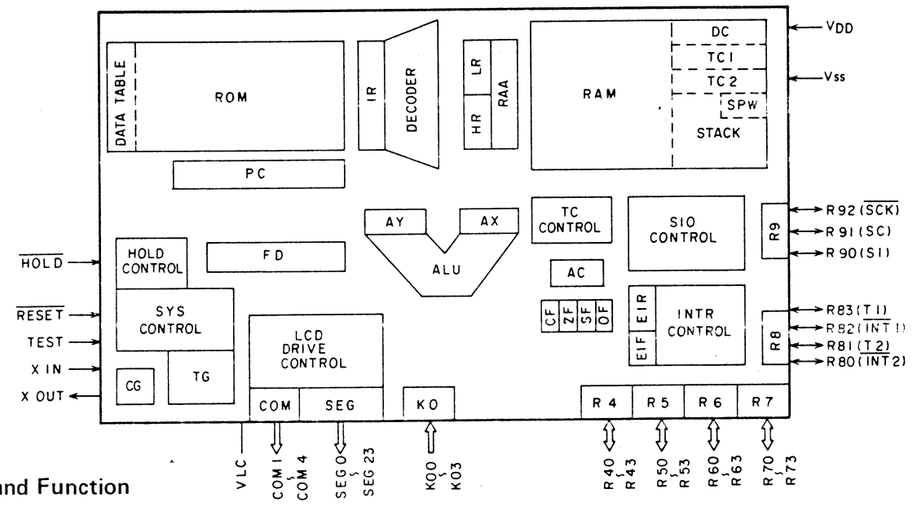
Q801 TMP47C420AF



Pin Name and Function

Name	Q'ty	Input and Output	Function	Pin No.
K03 ∿ K00	4	Input	Input Ports	13 to 16
R43 ∿ R40	4	I/O	I/O Ports	28 to 31
R53 ∿ R50	4	I/O	I/O Ports	32 to 35
R63 ∿ R60	4	I/O	I/O Ports	37 to 40
R73 ∿ R70	4	I/O	I/O Ports	41 to 44
R83 (T1)	1	I/O	I/O Port or Timer/Counter Input	23
R82 (INT1)	1	I/O	I/O Port or Interrupt Input	22
R81 (T2)	1	I/O	I/O Port or Timer/Counter Input	21
R80 (INT2)	1	I/O	I/O Port or Interrupt Input	20
R92 (SCK)	1	I/O	I/O Port or Serial Port Shift Clock I/O	26
R91 (SO)	1	I/O	I/O Port or Serial Output	25
R90 (SI)	1	I/O	I/O Port or Serial Input	24
SEG23 ∿ SEG0	24	Output	LCD Segment Driver Outputs	1 to 4, 45 to 67
COM4 ∿ COM1	4	Output	LCD Common Driver outputs	5 to 8
XIN, XOUT	2	Input, Output	Oscillator Element Connection Terminal	11, 12
RESET	1	Input	Initialize Signal Input	18
HOLD	1	Input	Hold Signal Input	19
TEST	1	Input	(Inputs low level)	17
VDD	1	Power	+5V	27
VSS	1	Power	0V	10
VLC	1	Power	LCD Drive Power	9

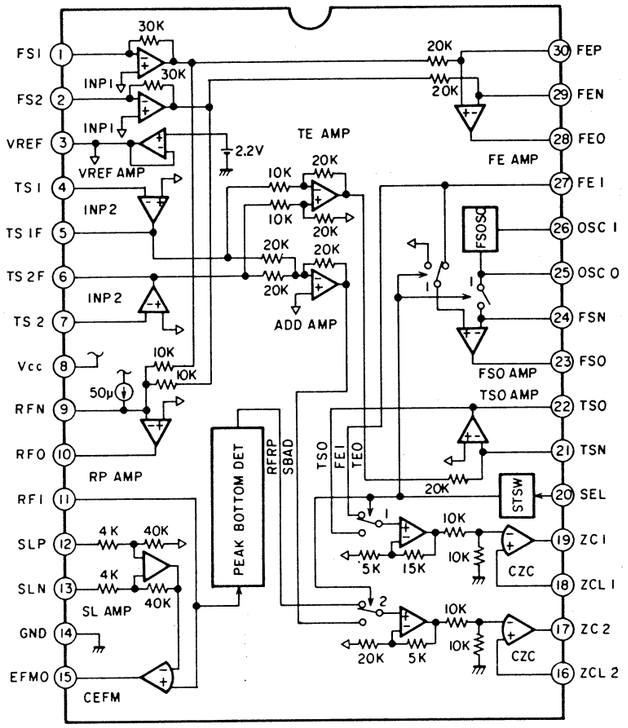
Q801 TMP47C420AF BLOCK DIAGRAM



Name and Function

Block Name	Function
PC	Program Counter (12-bit)
ROM	Program Memory (Includes Fixed Data Area)
IR, Decoder	Instruction Register, Decoder
HR, LR	H-Register (RAM Page Designation) L-Resister (Address Designation Inside RAM Page) 4-bit Respectively
RAA	RAM Address Buffer Register (8-bit)
RAM	Data Memory
STACK	Program Counter and Flag Stack Area (RAM Area)
SPW	Stack Pointer Word (RAM Area)
DC, Data Table	Data Counter (12-bit, RAM Area), Data Table (ROM Area)
AX, AY	Temporary Register for ALU Input
ALU	Arithmetic Logic Circuit
AC	Accumulator
FLAG (CF, ZF, SF, GF)	Flag
K, R	I/O Ports
INTR Control	Interruption Control (EIF: Interruption Permission Master F/F, EIR: Interruption Permission Register)
FD	Divider (4 Stages Prescaler +18 Stages)
TC1, TC2	12-bit Timer/Counter 2 Channels (RAM Area)
TC Control	Control of Timer/Counter
SIO Control	Control of Serial Port with 4-bit Buffer
HOLD Control	Control of Hold Function
SYS Control	Generation of Internal Control Signals
CG, TG	Oscillator Circuit, Timing Generator

Q701 TA8101N BLOCK DIAGRAM

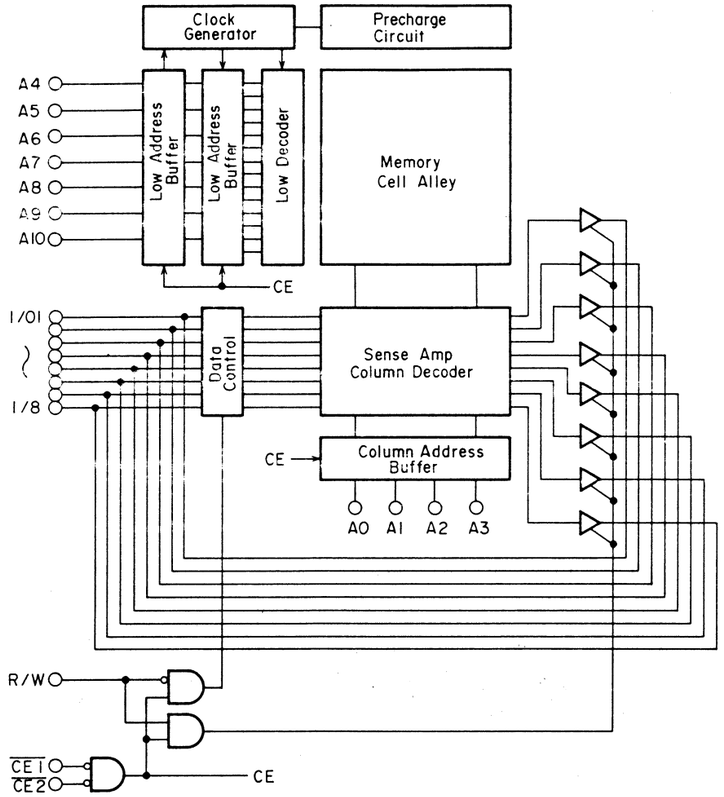


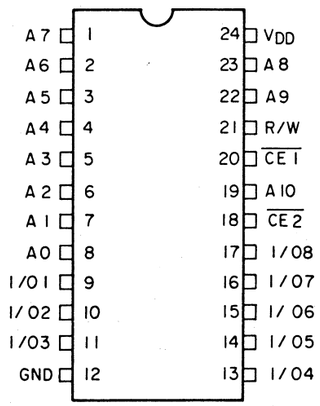
Terminal Function

Pin No.	Symbol	I/O	Function	Note
1	FS 1	I	Main beam (I – V) converter 1, 2 input terminal.	PIN diode Connect to B + D.
2	FS 2			PIN diode Connect to A + C.
3	VREF	O	Reference voltage source output terminal (+2.2V).	
4	TS 1	I	Sub beam (I – V) converter 1 input terminal.	PIN diode Connect to F.
5	TS 1F	O	Sub beam (I – V) converter 1, 2 output terminal.	Connect to TS1 through feedback CR.
6	TS 2F			Connect to TS2 through feedback CR.
7	TS 2	I	Sub beam (I – V) converter 2 input terminal.	PIN diode Connect to E.
8	Vcc	–	Power supply terminal (+5V).	

Pin No.	Symbol	I/O	Function	Note
9	RFN	I	RF amp opposite phase input terminal.	
10	RFO	O	RF amp output terminal.	Connect to RFN through feedback resistor.
11	RFI	I	RF signal input terminal.	Connect RFO through DC cut capacitor.
12	SLP	I	Slice level control amp positive phase input terminal.	
13	SLN	I	Slice level control amp opposite phase input terminal.	
14	GND	–	Ground terminal.	
15	EFMO	O	EFM signal data slicer output terminal. Open collector output.	Vcc 1KΩ External resistor
16	ZCL 2	I	Status comparator 2 positive phase input terminal.	
17	ZC 2	O	Status comparator 2 output terminal. Open collector output.	Vcc 8.2KΩ External resistor
18	ZCL 1	I	Status comparator 1 positive phase input terminal.	
19	ZC 1	O	Status comparator 1 output terminal. Open collector output.	Vcc 8.2KΩ External resistor
20	SEL	I	Analog switch control signal input terminal.	
21	TSN	I	Tracking servo amp opposite phase input terminal.	
22	TSO	O	Tracking servo amp output terminal.	Connect to TSN through feedback CR.
23	FSO	O	Focus servo amp output terminal.	Connect to FSN through feedback CR.
24	FSN	I	Focus servo amp opposite phase input terminal.	
25	OCS O	O	Focus search signal generation capacitor connection terminal.	
26	OSC I	I	Built-in current source control terminal.	
27	FEI	I	Focus error signal input terminal.	
28	FEO	O	Focus error amp output terminal.	Connect to FEN through feedback CR.
29	FEN	I	Focus error amp opposite phase input terminal.	
30	FEP	I	Focus error amp positive input terminal.	

Q704 TC5518BFL BLOCK DIAGRAM

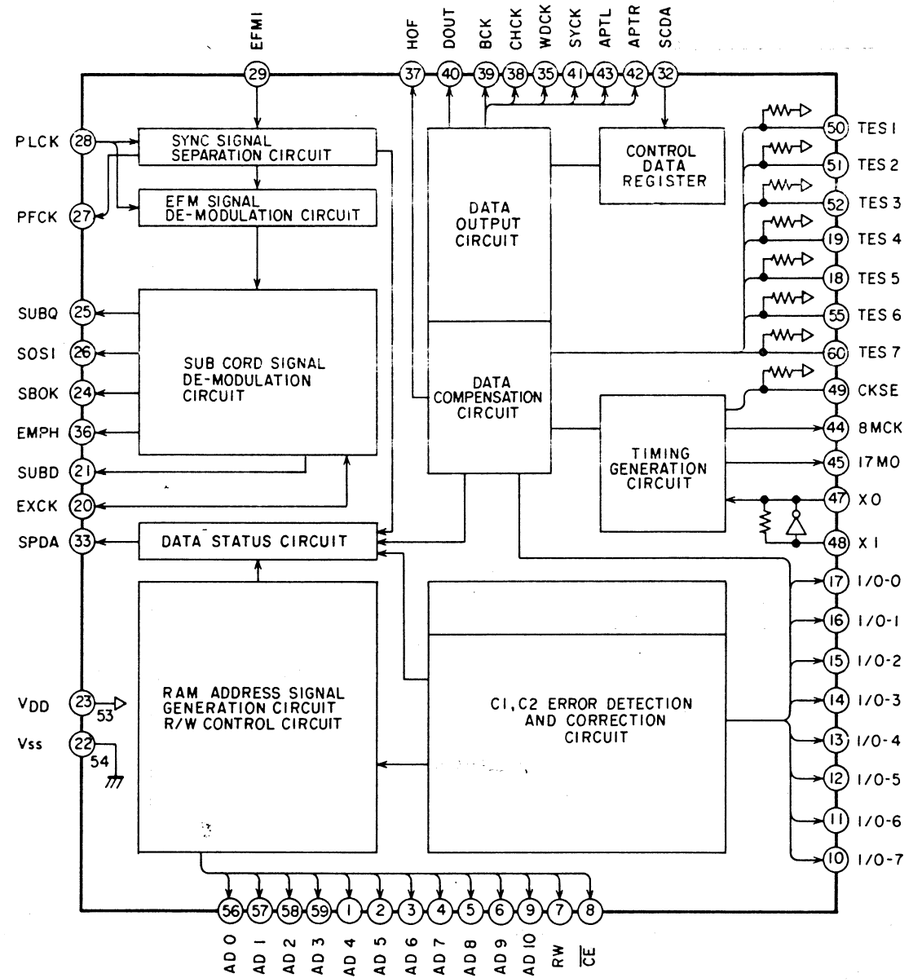




Pin Name

A0 A10	Address Input
R/W	Read/Write Input
$\overline{CE1}$, $\overline{CE2}$	Chip Enable Input
I/O1 ~ I/O8	Date Input/Output
V_{DD}/GND	Power Terminal

Q703 TC9200AF BLOCK DIAGRAM



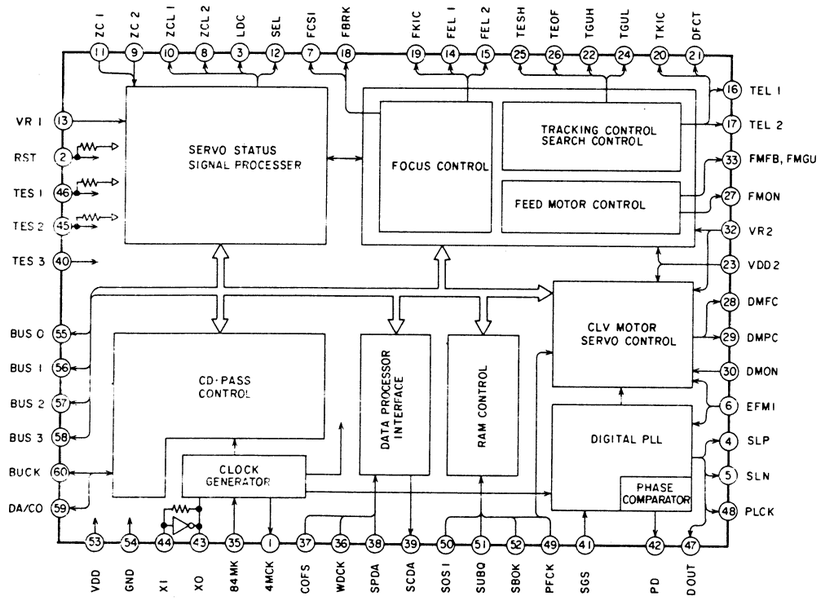
Terminal Function

Pin No.	Symbol	I/O	Function	Note
56 ~ 59, 1 ~ 6, 9	AD0 ~ AD3, AD4 ~ AD9, AD10	O	External RAM (8-bit x 2K) address signal output terminal.	Connect to AD0 ~ AD10 of external RAM.
7	RW	O	External RAM read/write signal output terminal.	Connect to RW of external RAM.
8	CE	O	External RAM chip enable signal output terminal.	Connect to CE of external RAM.

Pin No.	Symbol	I/O	Function	Note
10 ≀ 17	I/O-7 ≀ I/O-0	I/O	External RAM data bus line.	Connect I/O-7 ∿ 0 of external RAM.
18	TES5	I	Test terminal. Normally "H" or "Open".	
19	TES4			
20	EXCK	I	Sub code P ∿ W & S_0 + S_1, SBOK data read out clock input terminal.	
21	SUBD	O	Sub codes P ∿ W output terminal. Sets data in internal register at falling edge of PFCK. Outputs each data serially by inputting EXCK.	
22	Vss	–	Ground terminal.	
23	VDD	–	Power supply terminal.	
24	SBOK	O	CRC check output terminal for Q data in sub-code signal. "H" for no error, "L" for error. The output is the result for data preceding one block from 80-bit Q data being developed.	Connect to SBOK. (Pin 52)
25	SUBQ	O	Sub code signal Q data output terminal. Q data is output externally synchronizing with falling edge of PFCK.	Connect to TC9201AF SUBQ. (Pin 51)
26	S_0 S_1	O	Sub code sinks S_0 and S_1 output terminal. When sub code sink S_0 or S_1 is detected, "H" level is output for the frame period (synchronized with falling edge of PFCK).	Connect to TC9201AF PFCK. (Pin 50)
27	PFCK	O	Playback system frame period signal output terminal. Duty cycle: Approx. 50%, f = 7.35 kHz.	Connect to PFCK. (Pin 49)
28	PLCK	I	Data read out clock input terminal. The clock is generated in PLL circuit with RF signal reproduced from a disc. 4.32 MHz when PLL phase is locked. Duty cycle: Approx. 50%.	Connect to TC9201AF PLCK. (Pin 48)
29	EFMI	I	EFM signal input terminal. Inputs synchronizing with PLCK rising edge.	Connect to TC9201AF DOUT. (Pin 47)
30 31	NC	–	Non-connected terminal.	
32	SCDA	I	Control data serial input terminal. Inputs data serially every frame from TC9201AF.	Connect to TC9201AF SCDA. (Pin 39)
33	SPDA	O	Processor status signal output terminal. Serially outputs information every frame such as synchronizing condition, correction processing decision, result memory buffer quantity, etc. every one frame.	Connect to TC9201AF SPDA. (Pin 38)
34	COFS	O	Correction system frame synchronizing signal output terminal. f = 7.35 kHz (Xtal division)	Connect to TC9201AF COFS. (Pin 37)

Pin No.	Symbol	I/O	Function	Note
35	WDCK	O	Word clock output terminal. Clock of BCK divided into 16. Duty cycle: 50%, f = 88.2 kHz.	Connect to WDCK. (Pin 36)
36	EMPH	O	Emphasis on/off instruction signal output terminal. Emphasis on/off decision output of "H" in Q data control bits turns the emphasis ON. Two successive OK in CRC decision results is seemed as effective.	
37	HOF	O	Output data compensation flag output terminal. Flag is added in 8-bits unit and output in synchronization with falling edge of SYCK in sequence of each LSB and MSB side flag at the same time of the data output. "H", in case of compensation data.	
38	CHCK	O	Channel clock output terminal. When WDCK divided into 1/2 is "L". L ch output data develops and "H" R ch output data. Duty cycle: 50%, f = 44.1 kHz.	
39	BCK	O	Bit clock output terminal. Duty cycle: 50%, f = 1.4112 MHz.	
40	DOUT	O	Data output terminal. Outputs serially from MSB side in synchronization with falling edge of BCK.	
41	SYCK	O	Symbol clock output terminal. Clock of BCK divided into 8. Duty cycle: 50%, f = 176.4 kHz	
42	APTT	O	R ch data aperture signal output terminal.	
43	APTL	O	L ch data aperture signal output terminal.	
44	CK8M	O	8M clock output terminal. Xtal 16.9344 MHz two divided clock.	
45	17MO	O	17M clock output terminal. Xtal 16.9344 MHz buffer output.	
46	NC	–	Non-connected terminal.	
47	X – O	O	Xtal oscillator element connection terminal. Clock required for system is generated by connecting xtal oscillator element. Xtal 16.9344 MHz.	X-O
48	X – I	I		X-O
49	CKSE	I	Clock selection terminal. Selects 16.9344 MHz with X-I input clock "H" or open, or selects 8.4672 MHz with the clock, "L".	
50	TES1	I	Test terminal. Normally used at "H" or "Open".	
51	TES2			
52	TES3			
53	VDD	–	Power supply terminal.	
54	Vss	–	Ground terminal.	
55	TES6	I	Test terminal. Normally used at "H" or "Open".	
60	TES7			

Q702 TC9201AF BLOCK DIAGRAM



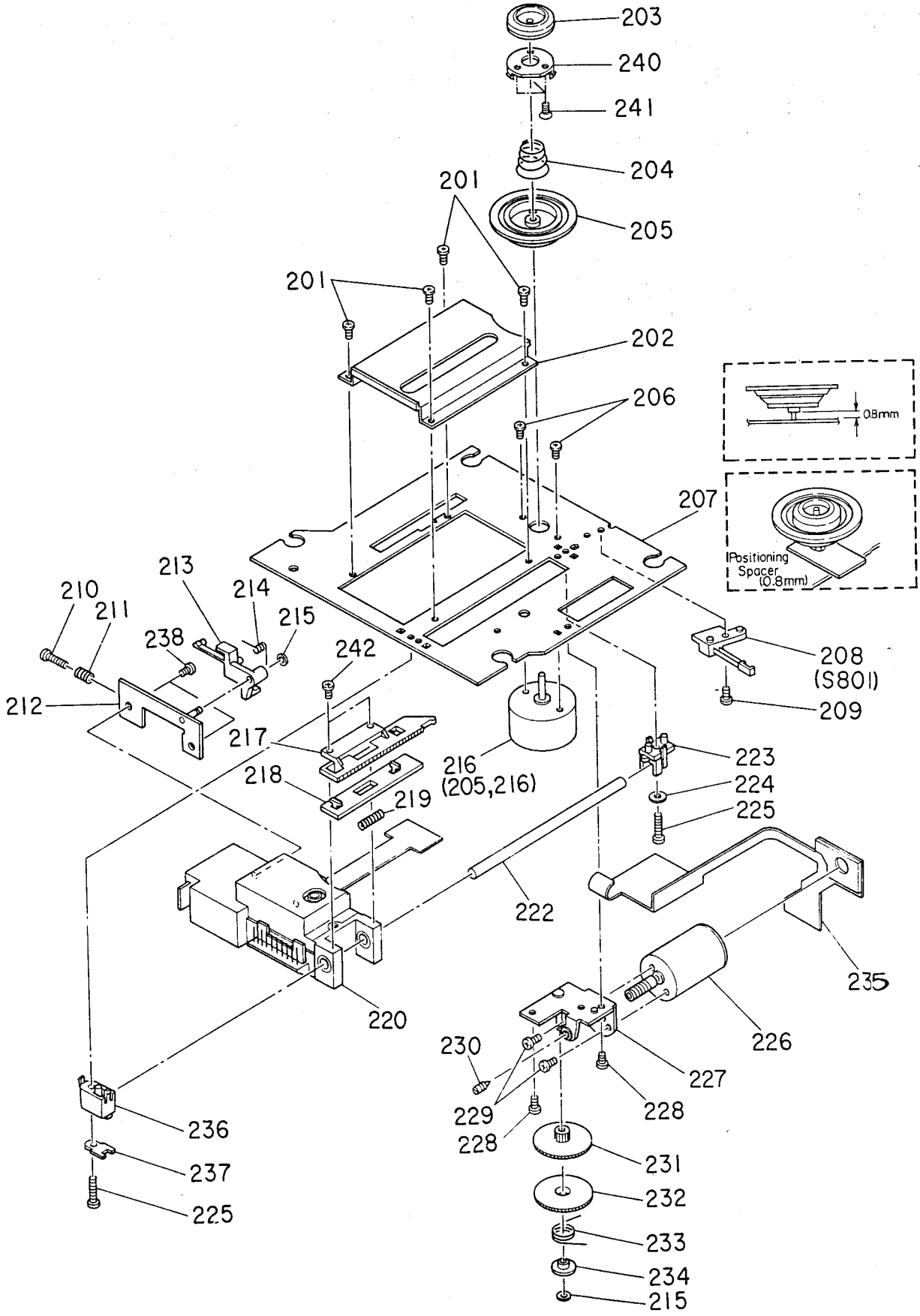
Terminal Function

Pin No.	Symbol	I/O	Function	Note
1	4MCK	O	4M clock output terminal. f = 4.2336 MHz (Xtal division)	
2	RST	I	Reset input terminal "H" or open normally. Internal system reset at "L".	
3	LDC	O	Control signal output terminal for laser diode drive circuit.	Open drain
4	SLP	O	EFM signal forward rotation output terminal.	3 states output.
5	SLN	O	EFM signal reverse rotation output terminal.	3 states output.
6	EFMI	I	EFM signal input terminal.	
7	FCSI	O	Polarity indication output terminal for focus actuator drive signal.	3 states output.
8	ZCL2	O	Built-in DA converter output terminal-2.	Connect to TA8101N ZCL2. (Pin 16)
9	ZC2	I	External comparator output signal input terminal-2.	Connect to TA8101N ZC2. (Pin 17)
10	ZCL1	O	Built-in DA converter output terminal-1.	Connect to TA8101N ZCL1. (Pin 18)
11	ZC1	I	External comparator output signal input terminal-1.	Connect to TA8101N ZC1. (Pin 19)
12	SEL	O	Pickup servo mode indication signal output terminal.	Connect to TA8101N SEL. (Pin 20)

Pin No.	Symbol	I/O	Function	Note
13	VR1	–	Built-in DA converter power supply terminal. +2.1V	
14 15	FEL1 FEL2	O	Focus gain adjustment analog switch output terminal.	Two state outputs VR2, Hi-Z.
16 17	TEL1 TEL2	O	Tracking gain adjustment analog switch output terminal.	Two state outputs VR2, Hi-Z.
18	FBRK	O	Focus actuator brake signal output terminal.	3 states output.
19	FKIC	O	Focus actuator drive signal output terminal.	3 states output.
20	TKIC	O	Tracking actuator kick signal output terminal.	3 states output.
21	DFCT	O	Defect detection terminal, normaliy Hi-z. Detects defect in PU output signal in only normal play mode and turns to VR2 potential during the detection period.	
22	TGUH	I	Analog switch for tracking servo loop middle and low frequency comparator input terminal.	
23	VDD	–	Power supply terminal.	
24	TGUL	I	Tracking servo loop low frequency gain switching analog switch input terminal.	Connect to TA8101N TSO. (Pin 22)
25	TESH	I	Tracking error signal sample holding analog switch input terminal.	
26	TEOF	I	Tracking servo operation on/off analog switch input terminal.	
27	FMON	I	Feed servo operation on/off analog switch input terminal.	
28	DMFC	O	Disc motor CLV servo AFC output terminal.	Three state outputs, H, L, VR2.
29	DMPC	O	Disc motor CLV servo APC output terminal.	3 states output.
30	DMON	I	Disc motor drive circuit gain, switching analog switch input terminal.	
31	FMGU	I	Feed servo loop gain switching analog switch input terminal.	
32	VR2	–	Pickup servo circuit and disc servo circuit reference power supply terminal. +2.1V	
33	FMFB	O	Feed motor forward and backward feeding control signal output terminal.	3 states output.
34	VDD2	–	Pickup servo circuit and disc servo circuit power supply terminal. +2.1V	
35	84MK	I	8M clock input terminal. f = 8.4672 MHz (Xtal division)	
36	WDCK	I	Control data transmission and reception clock input terminal.	
37	COFS	I	Correction system frame period signal input terminal. f = 7.35 kHz	
38	SPDA	I	Status signal serial input terminal.	Connect to TC9200AF SCDA. (Pin 33)

Pin No.	Symbol	I/O	Function	Note
39	SCDA	O	Control data serial output terminal.	Connect to TC9200AF SPDA. (Pin 32)
40	TES3	I	Test terminal. Normally "L".	
41	SGS	I	PLL circuit selection terminal. Analog PLL circuit at "H". Digital PLL circuit at "L".	
42	PD	O	PLL phase comparator signal output terminal.	3 states output.
43	X-O	O	Xtal oscillator connection terminal. Generates clock required for system with xtal oscillator connected.	X-O
44	X-I	I		X-I
45	TES2	I	Test terminal (with pull-up resistor). Normally "H" or open.	
46	TES1			
47	DOUT	O	EFM signal output terminal.	Connect to TC9200AF EFMI. (Pin 29)
48	PLCK	O	Bit clock output terminal.	Connect to TC9200AF PLCK. (Pin 28)
49	PFCK	I	Playback system frame period signal input terminal. SUBQ, SBOK, and SOS1 are entered in input synchronization with falling edge of the signal. Used as comparison frequency for CLV servo AFC and APC.	Connect to TC9200AF PFCK. (Pin 27)
50	SOS1	I	Sub code signal sync pattern S0 and S1 input terminal.	Connect to TC9200AF S0 and S1. (Pin 26)
51	SUBQ	I	Q data input signal for sub code signal. Inputs into serial Q data 80 bits are defined as one block and stored in internal RAM.	Connect to TC9200AF SUBQ. (Pin 25)
52	SBOK	I	CRC check descision input terminal for sub code signal. "H" for no error, and "L" for error.	Connect to TC9200AF SBOK. (Pin 24)
53	VDD	–	Power supply terminal. +5V	
54	Vss	–	Ground terminal.	
55	BUS0	I/O	Command and data transmission and reception sub line. Command and data are entered inside at falling edge of BUCK. Allows data (entered during "H" period of BUCK) to appear on bus lines.	Connect to external microprocessor.
58	BUS3			
59	DA/CO	I/O	Command and data processing control I/O. "L" when microprocessor transmits 1st command word, say "L" (input). Once all commands and data are received correctly, the terminal turns "L" (output) for "L" period of BUCK. Used as acknowledge signal (ACK) to microprocessor. Normally "H".	
60	BUCK	I	Command and data transmission and reception clock input terminal. "H" except reception mode with microprocessor. At reception mode, "L" for more than 9 μs and "H" for 4 μs $\sim$ 90 μs. 4 μs after BUCK falling, DA/CO and BUS0 $\sim$ 3 are switched over.	

10. MECHANISM EXPLODED VIEW (CD)



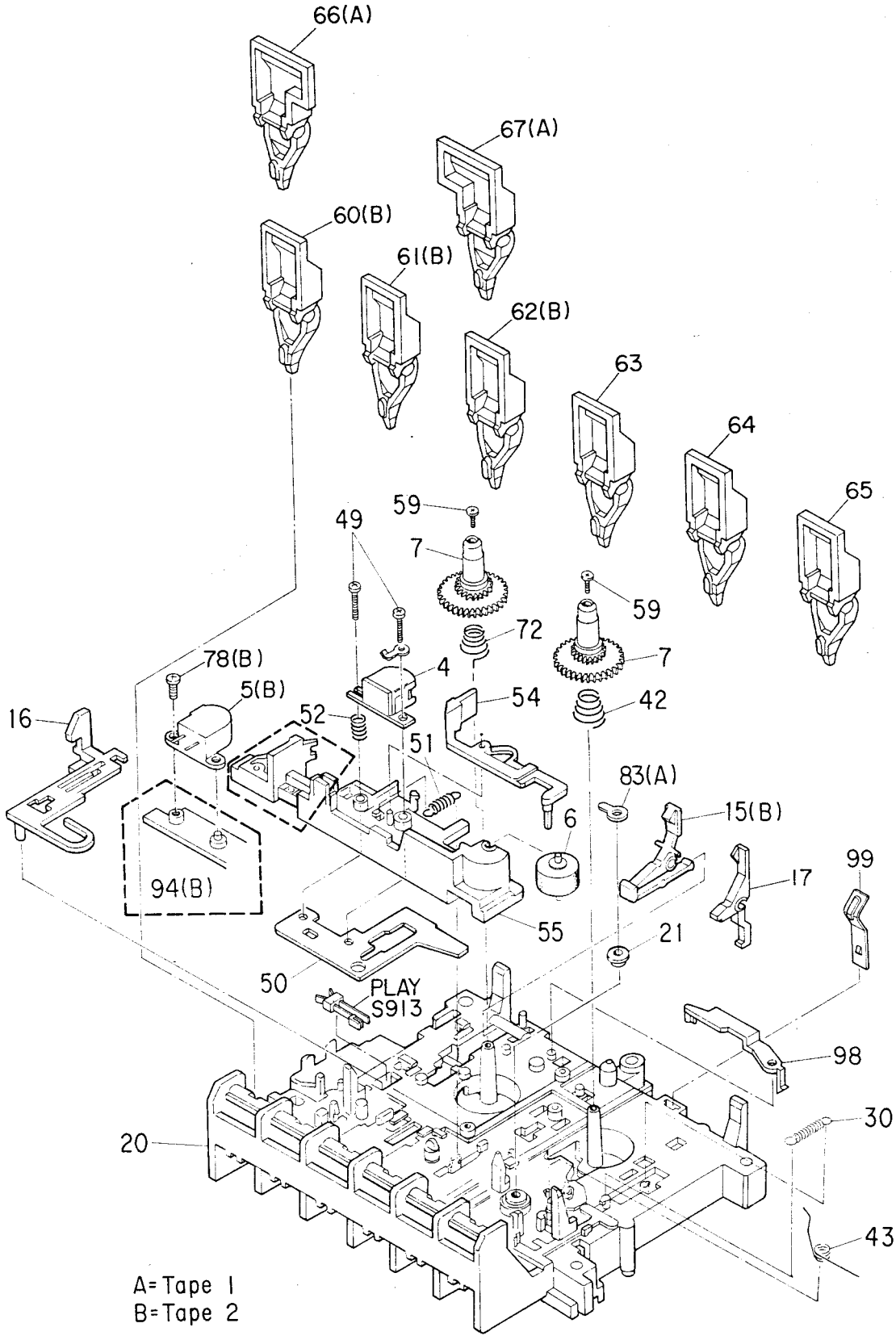
NOTE: Parts excluded in the parts list are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

11.MECHANISM PARTS LIST (CD)

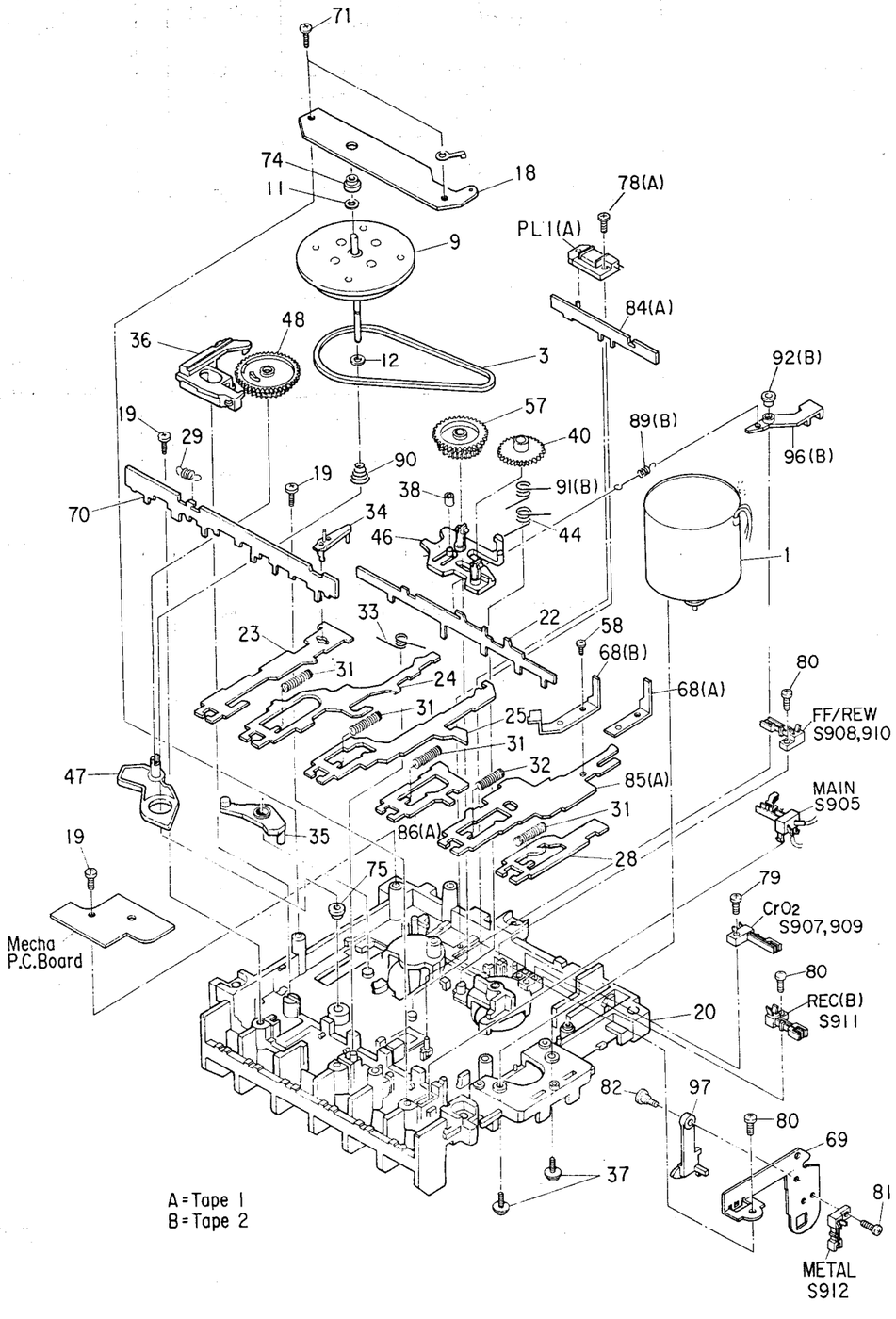
Location No.	Part No.	Description
201	22708647	Screw, ϕ2 x 1.5mm, PAN
202	20778196	Pick-up Cover
203	20727181	Center Ring
204	25777528	Spring, Center Ring
205	20723156	Disc Table
206	22707725	Screw, ϕ1.7 x 2.5mm, PAN
208	22196706	Switch, Leaf (S801)
209	22708524	Screw, ϕ2 x 4mm, BID
210	22708576	Screw, ϕ2 x 10mm, BID
211	25777137	Spring, Azimuth
213	20754258	Adjust Lever, Pick-up
214	25778347	Spring, Adjust Lever
215	20776135	Washer, ϕ2.1mm
216	25792071	Disc Motor Ass'y
217	20727155	Rack Gear A
218	20727156	Rack Gear B
219	25777529	Spring, Rack
220	25111050	Laser Pick-up Kit
222	20764264	Guide Shaft
223	20748299	Shaft Holder B
224	22708560	Washer, 2mmd
225	22708577	Screw, ϕ2 x 12mm, BID
226	25792070	Drive Motor Ass'y
228	22708523	Screw, ϕ2 x 3mm, BID
229	22707579	Screw, ϕ2 x 3mm, PAN
230	20776149	Thrust Screw
231	20727168	Gear B
232	20727167	Gear A
233	25778346	Spring, Gear
234	25754331	Boss
235	22192931	Flexible PC Board
236	20748300	Shaft Holder A
237	25766050	Washer, ϕ1.6mm
238	22708529	Screw, ϕ2.6 x 4mm, BID
240	20727192	Hook, Center Ring
241	22707544	Screw, ϕ1.4 x 20mm, FLT
242	22708525	Screw, ϕ2 x 5mm, BID

Location No.	Part No.	Description

12. MECHANISM EXPLODED VIEW (CASSETTE)



NOTE: Parts excluded in the parts list are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

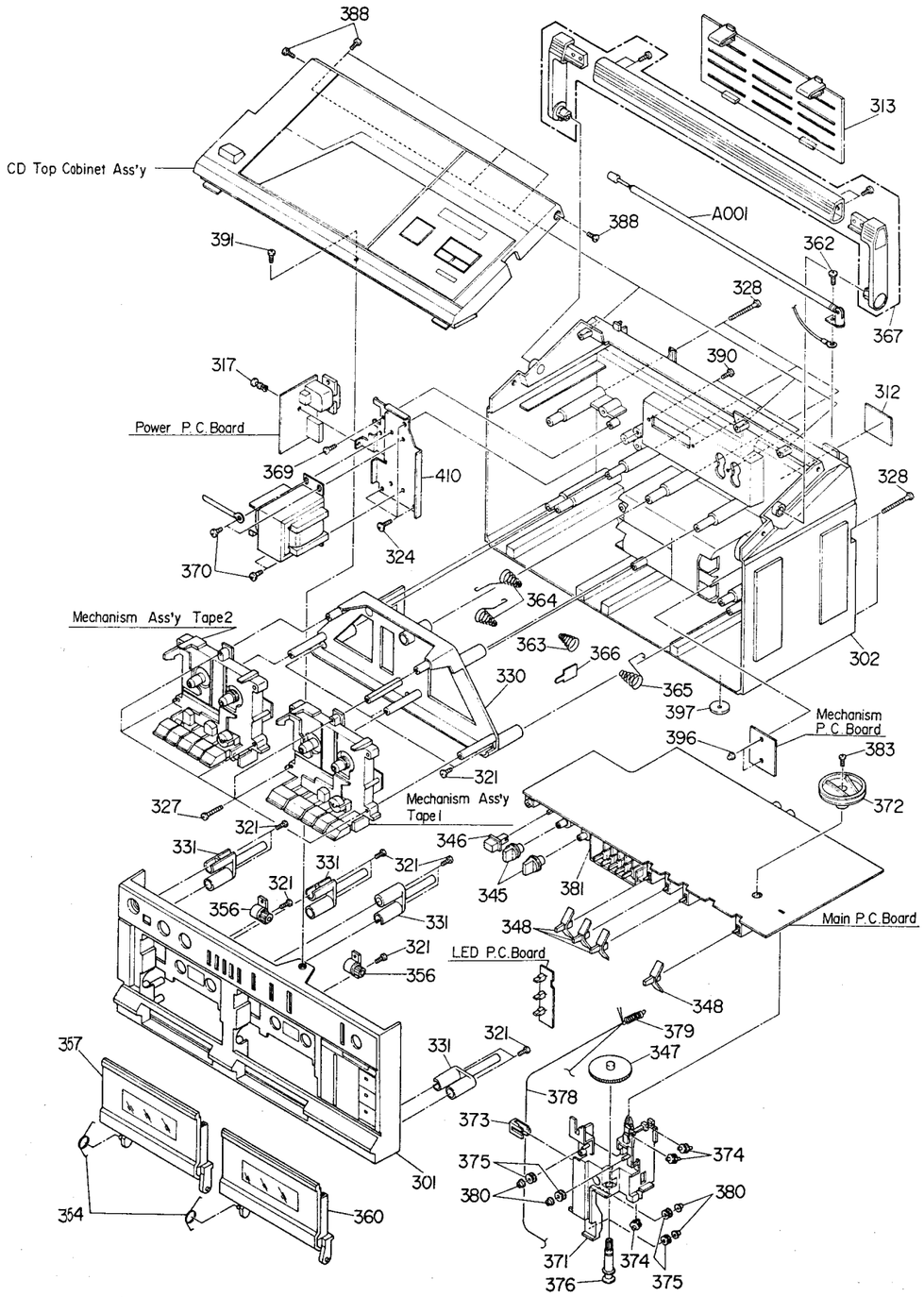


13. MECHANISM PARTS LIST (CASSETTE)

Location No.	Part No.	Description
1	25792147	Motor Ass'y
3	25759072	Belt, Drive
4	22217493	Head Rec./Play, HRPT493
5	22218256	Head, Erase, (Tape 2)
6	25797114	Pressure Roller
7	25754507	Plate, Reel
9	25797144	Flywheel Ass'y
11	25766337	Washer, 2.1 x 5.5 x 0.3t
12	25766344	Washer, 2.1 x 3.4 x 0.5t
15	25784377	Lever, Rec. Lock, Tape 2
16	25784378	Slider, Eject
17	25784422	Lever, Chrome Detector
19	22707301	Screw, ϕ2.6 x 8mm, BID
20	25781322	Main Chassis, Mechanism
21	25752233	Holder, Flywheel
29	25776900	Spring
30	25776938	Spring
31	25777512	Spring
32	25777513	Spring
33	25778353	Spring, Lock Slider
34	25784375	Lever, Lock
35	25784376	Lever, Pause
36	25784381	Lever, ASO
37	22707174	Screw, ϕ2.6 x 6mm, FLPAN
38	25733494	Spacer
40	25756507	Gear, High Speed
42	25777511	Spring
43	25778323	Spring, Take-up Lever
44	25778342	Spring
46	25784379	Lever, High Speed
47	25784380	Lever, Take-up
48	25713599	Gear Ass'y, Take-up
49	22708527	Screw, ϕ2 x 8mm, BID
51	25776986	Spring
52	25777137	Spring
54	25784383	Lever, ASO Detect
55	25784384	Slider, Head (Tape 1)
57	25793003	Fast Clutch Ass'y
58	22707426	Screw, ϕ2 x 5mm, BID
59	22708205	Screw, ϕ1.7 x 6mm, PAN, Tapping, BLK
60	25784443	Button, Stop/Eject, Tape 2
61	25784444	Button, Rec., Tape 2
62	25784445	Button, Play, Tape 2
63	25784446	Button, REW
64	25784447	Button, FF
65	25784448	Button, PAUSE
66	25784449	Button, Stop/Eject, Tape 1
67	25784450	Button, Play, Tape 1
70	25749127	Operation Plate, Stop
71	22707298	Screw, ϕ2 x 6mm, BID, Tapping

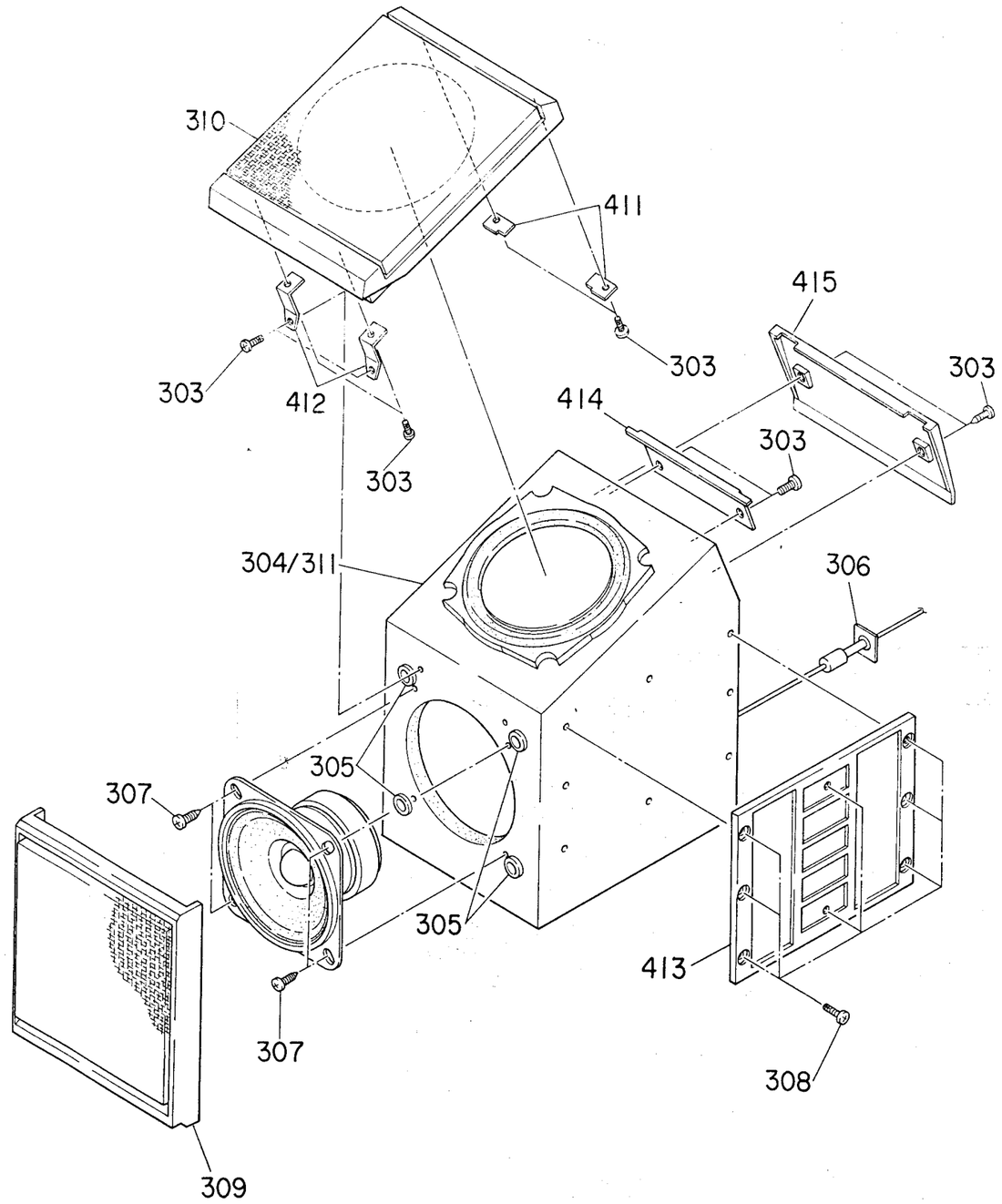
Location No.	Part No.	Description
72	25777564	Spring, Back Tension
74	25725504	Holder, Flywheel
75	25726796	Holder, Flywheel
78	22707299	Screw, ϕ2 x 8mm, BID, Tapping
79	22707303	Screw, ϕ2.6 x 10mm, BID, Tapping
80	22707870	Screw, ϕ2 x 8mm, PAN, Tapping
81	22708526	Screw, ϕ2 x 6mm, BID, Tape 2
82	22708610	Screw, ϕ2.6 x 5.3mm, Special, Tape 2
83	25747264	Lever, Search, Tape 1
84	25749126	Slider, Search, Tape 1
85	25749175	Slider, Play, Tape 1
86	25749176	Operation Plate, Tape 1
89	25776961	Spring, Tape 2
90	25777606	Spring, Flywheel
91	25778422	Spring, Lever, High Speed, Tape 2
92	25783199	Washer, 2 x 5 x 1.5t, Tape 2
94	25784385	Slider, Head, Tape 2
96	25784483	Lever, Rec. Stop, Tape 2
97	25784492	Lever, Metal Detector
98	25784493	Lever, Sub Up

14. CABINET EXPLODED VIEW (CASSETTE)



NOTE: Parts excluded in the parts list are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

15. CABINET EXPLODED VIEW (SP BOX)



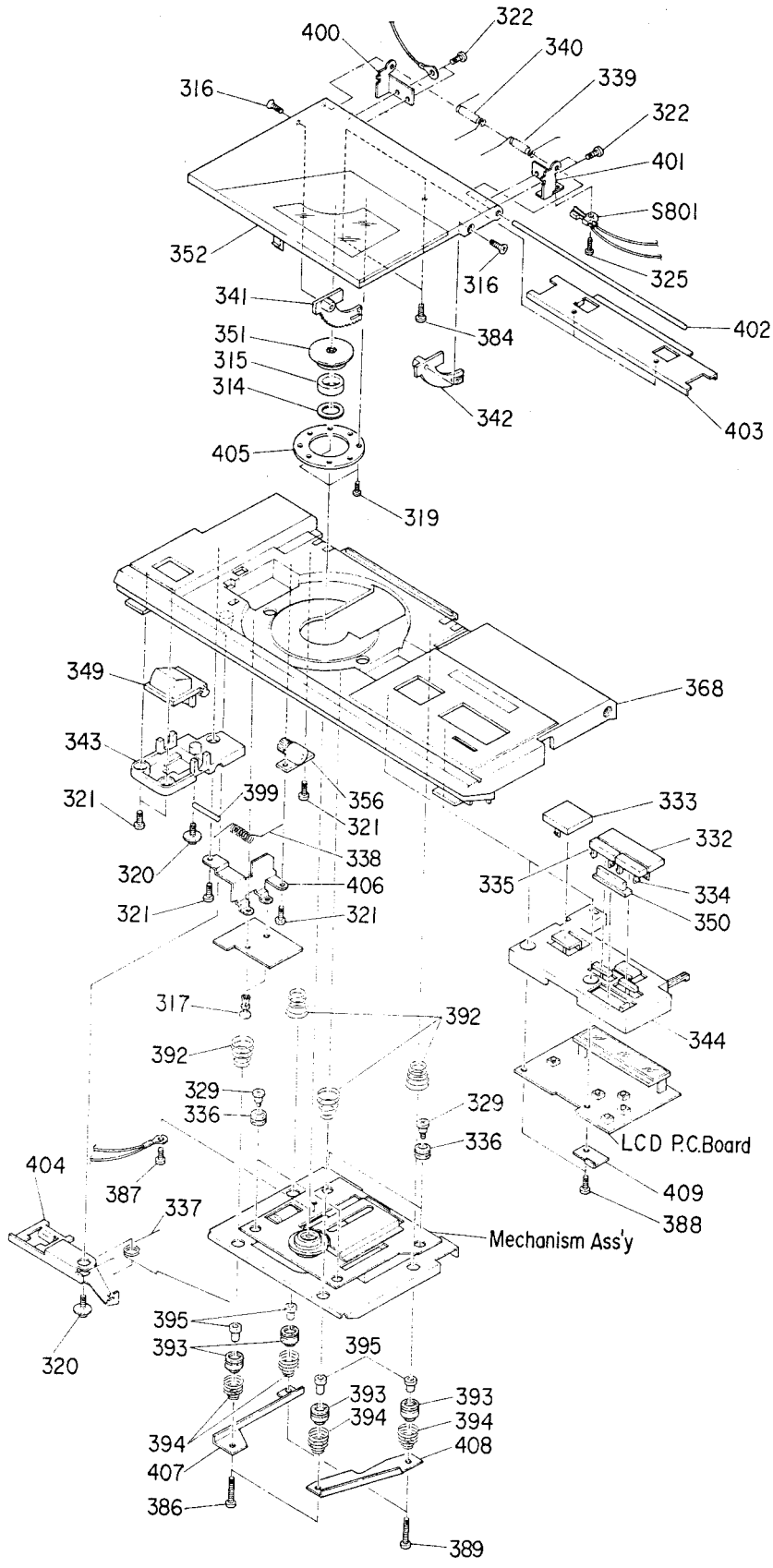
NOTE: Parts excluded in the parts list are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

16. CABINET PARTS LIST (CASSETTE AND SP BOX)

Location No.	Part No.	Description
301	25885817	Front Cabinet Ass'y
302	25885818	Back Cabinet Ass'y
303	22707297	Screw, ϕ3.1 x 13mm, WRUD
304	20818329	Speaker Box Sub Ass'y, Left
305	20863050	Catcher
306	20881202	Rubber Bush
307	22707258	Screw, ϕ4 x 16mm, BID, Tapping
308	22707288	Screw, ϕ3.1 x 16mm, WRUD
309	25885809	Speaker Front Sub Ass'y
310	25885810	Speaker Top Sub Ass'y
311	20818330	Speaker Box Sub Ass'y, Right
312	22868085	Name Label, Europe
312	22868086	Name Label, U.K.
313	25884293	Battery Cover
317	22705020	Plastic Rivet, ϕ3 x 4.5mm
321	22707802	Screw, ϕ3 x 12mm, BID, Tapping
324	22707871	Screw, ϕ4 x 12mm, BID, Tapping,
327	22708308	Screw, ϕ3 x 20mm, BID, Tapping, BLK
328	22708337	Screw, ϕ3 x 35mm, BID, Tapping
330	22714493	Frame, Mecha.
331	22724494	Frame, Joint
345	25886973	Knob, Volume/Balance
346	25886443	Knob, Power
347	25886646	Knob, Tuning
348	25886748	Knob, Lever Switch
354	25775336	Spring, Cassette Up
356	25885460	Damper
357	25885811	Cassette Cover Ass'y, Left
360	25885812	Cassette Cover Ass'y, Right
362	22707801	Screw, ϕ3 x 12mm, BID, Tapping, Chrome
363	25772571	Battery Spring A
364	25777124	Battery Spring C
365	25777282	Battery Spring SX
366	25864166	Battery Contact
367	25875016	Handle Ass'y
369	22708539	Screw, ϕ3 x 6mm, BID
370	22708547	Screw, ϕ4 x 6mm, BID
371	22714491	Frame, Tuner
372	22714497	Dial Drum
373	22741490	Pointer
374	22742287	Pulley
375	22742370	Pulley
376	22743309	Tuning Shaft
378	22999222	Dial Cord
379	25776973	Spring, Dial Drum
380	25783226	Bushing

Location No.	Part No.	Description
381	25844400	Holder, Graphic Equalizer
383	22708532	Screw, ϕ2.6 x 6mm, BID, Dial Drum
388	22707826	Screw, ϕ3 x 10mm, BID, Tapping
390	22708033	Screw, ϕ3 x 10mm, BID, Tapping, BLK
391	22708330	Screw, ϕ3 x 8mm, BID, Tapping, BLK
396	25783211	Bushing
397	25857430	Rubber, Leg

17. CABINET EXPLODED VIEW (CD)



NOTE: Parts excluded in the parts list are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

18. CABINET PARTS LIST (CD)

Location No.	Part No.	Description
314	20748345	Sheet, Magnet
315	20754089	Magnet C
316	22708770	Screw, ϕ2.6 x 8mm, FLT, BLK
317	22705020	Plastic Rivet, ϕ3 x 4.5mm
319	22707403	Screw, ϕ2 x 5mm, Special
320	22708048	Screw, ϕ3 x 10mm, PAN, Tapping with Washer
321	22707802	Screw, ϕ3 x 12mm, BID, Tapping
322	22707804	Screw, ϕ3 x 12mm, BID Tapping, BLK
325	22707923	Screw, ϕ2 x 6mm, BID
329	22708722	Screw, ϕ2.6 x 3mm, Special
332	22884689	Knob, Play/Repeat
333	22884690	Knob, Pause/Stop/Memory
334	22884691	Knob, Up
335	22884692	Knob, Down
336	25761544	Cushion
337	25778412	Spring, CD Cover Lock
338	25778413	Spring, CD Sub Open
339	25778414	Spring, CD Right Open
340	25778415	Spring, CD Left Open
341	25848150	Cover, Left Hinge
342	25848151	Cover, Right Hinge
343	25848152	Retainer, CD Open
344	25848153	Frame, CD Button
349	25886910	Button, CD Open
350	25886912	Button, Display
351	20741464	Yoke Guide Ass'y
352	25885816	CD Cover Ass'y
356	25885460	Damper
368	25885819	Top Cabinet Ass'y
384	22708537	Screw, ϕ3 x 4mm, BID BLK
386	22708546	Screw, ϕ3 x 12mm, BID
387	22707445	Screw, ϕ3 x 6mm, BID, Tapping
388	22707826	Screw, ϕ3 x 10mm, BID
389	22707835	Screw, ϕ3 x 16mm, BID, Tapping
392	25777270	Spring, Clumper
393	25761530	Cushion
394	25778434	Spring
395	22753380	Spacer
399	22743390	Shaft, Sub Spring

Location No.	Part No.	Description

19. PARTS LIST

CAUTION:
The ⚠ mark, the Location No. circled with oval in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

Location No.	Part No.	Description
ICS, TRANSISTORS & DIODES		
Q001	B0325700	IC, TA7378P
Q101	B0377670	IC, TA8110P
Q201	B0325620	IC, TA7370P
Q301	B0320460	IC, TA7269P
Q302, 303	B0358475	IC, TA7796Z
Q304, 305, Q412, 433, Q712 ∿ 714	A6342210	Transistor, 2SC2878-B
Q401	B0356695	IC, TA7668BP
Q402, 404, Q411, 428, Q432, 509, Q514, 515, Q1, Q1	A6534440	Transistor, 2SA1048-GR
Q403, 405, Q406, Q408 ∿ 410, Q417, 418, Q427, 429, Q430, 431, Q504, 507, Q508, Q510 ∿ 513, Q516, 517, Q803, 804, Q906, 907	A6332440	Transistor, 2SC2458-GR
Q413, 414, Q421 ∿ 426	A6058491	Transistor, 2SK362-BN (JA)
Q415, 416, Q419, 420	A6041970	Transistor, 2SK118NEW-R
Q501	B0325320	IC, TA7341P
Q502, 503, Q505	A6321240	Transistor, 2SC2120-Y
Q601	22117696	IC, NJM2904
Q602	A6543610	Transistor, 2SA1213-Y
Q701	B0377580	IC, TA8101N
Q702	B0412016	IC, TC9201AF-BS
Q703	B0412006	IC, TC9200AF-BS

Location No.	Part No.	Description
Q704	B0483585	IC, TC5518BFL-20 (T)
Q705	22117709	IC, NJM3403ADC
Q706 ∿ 709	B0377590	IC, TA8102P
Q710	B0272750	IC, TD6710N
Q711	B0326190	IC, TA7415P
Q801	22117884	IC, TMP47C420AF8665Z
Q802	22117550	IC, PST520D
Q901	A8648520	Transistor, 2SD880-Y
Q902	A6058530	Transistor, 2SK363V
Q903	A6868020	Transistor, 2SD1406-Y
Q904	A6330425	Transistor, 2SC2500-B (Z)
Q905	A6848520	Transistor, 2SD880-Y
D001, 301, D401 ∿ 409, D501 ∿ 522, D701 ∿ 705, D911 ∿ 913	A7160570	Diode, 1SS176
D201, 905	A8603140	Diode, LED, TLR208, RED
D601	A7238090-	Diode, Zener, 02CZ2.4X
D602	A7150650	Diode, 1SS184
⚠ D901 ∿ 904	A7978380	Diode, S5277B
D906	A7110115	Diode, Zener, 05Z6.8Y
D907	A7110159	Diode, Zener, 05Z7.5X
D908	A8606660	Diode, LED, TLG208, GRN
D909	A7110076	Diode, Zener, 05Z6.2Y
D910	A7110312	Diode, Zener, 05Z10Y

COILS & TRANSFORMERS		
L001	22294763	Coil, FM Antenna
L002	22294669	Coil, FM Oscillator
L003	22291188	Coil, Choke
L005	22282251	Coil, SW Antenna
L007/008	22243044	Coil, Bar Antenna, LW/MW
L012	22285321	Coil, SW Oscillator
L013	22245512	Coil, LW Oscillator
L014	22245385	Coil, MW Oscillator

Location No.	Part No.	Description
L101	22265895	IF Transformer, FM
L102	22265896	IF Transformer, FM
L103	22264912	IF Transformer, AM
L501	22235262	Coil, Tape Bias
⚠ T901	22224845	Power Transformer, Europe
⚠ T901	22224846	Power Transformer, U.K.

ELECTRICAL PARTS

S1-1, 1-2	22196341	Switch, Lever, Dubbing
S2-1 ∿ 2-3	22196231	Switch, Lever, Mode
S3-1 ∿ 3-6	22196593	Switch, Lever, Function
S4-1 ∿ 4-4	22196572	Switch, Lever, Band
⚠ S9	22196569	Switch, Push, Power
S601	22196068	Leaf Switch, Start Limit
S801	22196706	Switch, Leaf, Close Limit
S802/803/ S804/805/ S806	22196696	Switch, Key, CD Player Function
S905	22196715	Switch, Leaf, Power, Tape 1
S906	22196323	Switch, Leaf, Play, Tape 1
S907, 909	22195983	Switch, Leaf, CrO_2, Tape 1 & 2
S908, 910	22196064	Switch, Leaf, REW/FF, Tape 1 & 2
S911, 912	22196323	Switch, Leaf, Rec., Metal Tape 2
S913	22196641	Switch, Leaf, Play, Tape 2
J301	22162546	Terminal, Speaker, 4P
J302	22198172	Jack, Headphone
J401/701	22163887	Jack, US-4P, AUX/CD Out
⚠ J901	22167820	AC Socket, Europe
⚠ J901	22169069	AC Socket, U.K.
A001	22124711	Rod Antenna
W301, 302	22152631	Speaker, 100mmd
Z001	22153362	Filter, FM, RF
Z101	22153299	Filter, Ceramic, FM
Z102	22153413	Filter, Ceramic, AM
Z801	22104648	Liquid Crystal Display
Z802, 803	22137776	Low-pass Filter, LC-7
Z804	22153382	Crystal Osc. 16.9 MHz
⚠ PL1	22147297	Solenoid

Location No.	Part No.	Description
⚠ F901	22144372	Fuse, 2.5A/250V, Time Lug, Europe
⚠ F901	22144518	Fuse, 2.5A/250V, Time Lug, U.K.
EP01	22170619	Speaker Cord
EP02	22165047	Holder, Fuse

CAPACITORS

D = ±0.5pF, J = ±5%, K = ±10%, M = ±20%, Z = −20+80%
ABBREVIATIONS: CD=Ceramic Disk, PP=Polypropylene, BL = Barrier Layer, MY = Mylar, EL = Electrolytic

C001/002/ C003/004/ C005/010/ C012/017	22308235	Variable Capacitor
C008/009	22309184	Trimmer, LW/SW Ant.
C011	22361100	CD, 10pF, 50V, J
C014/015	22309184	Trimmer, SW/LW Osc.
C019	22361220	CD, 22pF, 50V, K
C020	22360141	CD, 22pF, 50V, J, PH
C022	22361509	CD, 5pF, 50V, J
C024	22361150	CD, 15pF, 50V, K
C025	22361560	CD, 56pF, 50V, J
C028	22361240	CD, 24pF, 50V, J
C029	22321164	PP, 220pF, 50V, J
C031	22361270	CD, 27pF, 50V, J
C034	22361330	CD, 33pF, 50V, J
C038	22349392	CD, 3900pF, 50V, K
C039	22321048	PP, 270pF, 50V, J
C041	22321016	PP, 360pF, 50V, J
C045	22361150	CD, 15pF, 50V, J
C047	22349102	CD, 1000pF, 50V, K
C048	22361509	CD, 5pF, 50V, D
C049	22349102	CD, 1000pF, 50V, K
C050	22342103	CD, 0.01mfd, 50V, Z
C051	22342103	CD, 0.01mfd, 50V, Z
C052	22360165	CD, 27pF, 50V, K, TH
C053	22349391	CD, 390pF, 50V, K
C054	22361309	CD, 3pF, 50V, D
C055	22361150	CD, 15pF, 50V, J
C101	22488478	EL, 0.47mfd, 50V
C103	22360331	BL, 0.047mfd, 25V, M
C104	22342473	CD, 0.047mfd, 50V, Z
C105	22483470	EL, 47mfd, 10V
C106	22342103	CD, 0.01mfd, 50V, Z
C107	22342223	CD, 0.022mfd, 50V, Z
C108	22488479	EL, 4.7mfd, 50V
C110	22483101	EL, 100mfd, 10V

Location No.	Part No.	Description
C111	22342103	CD, 0.01mfd, 50V, Z
C112	22349102	CD, 1000pF, 50V, K
C115	22349391	CD, 390pF, 50V, K
C117	22349391	CD, 390pF, 50V, K
C205	22488339	EL, 3.3mfd, 50V
C206	22488109	EL, 1mfd, 50V
C207	22360331	BL, 0.047mfd, 25V, M
C208	22321051	PP, 390pF, 50V, J
C209	22360331	BL, 0.047mfd, 25V, M
C210, 211	22360545	BL, 0.012mfd, 25V, K
C303, 304	22483101	EL, 100mfd, 10V
C305, 306	22483470	EL, 47mfd, 10V
C307, 308	22371154	MY, 0.15mfd, 50V, J
C309, 310	22483470	EL, 47mfd, 10V
C311	22483470	EL, 47mfd, 10V
C312, 313	22349102	CD, 1000pF, 50V, K
C314, 315	22483101	EL, 100mfd, 10V
C316, 317	22488478	EL, 0.47mfd, 50V
C318, 319	22488339	EL, 3.3mfd, 50V
C320, 321	22488478	EL, 0.47mfd, 50V
C322, 323	22349681	CD, 680pF, 50V, K
C324, 325	22360330	BL, 0.033mfd, 25V, M
C326, 327	22360537	BL, 2700pF, 25V, K
C328, 329	22480003	EL, 0.1mfd, 50V
C330, 331	22360543	BL, 8200pF, 25V, K
C332, 333	22488478	EL, 0.47mfd, 50V
C334, 335	22360549	BL, 0.027mfd, 25V, K
C336, 337	22488109	EL, 1mfd, 50V
C338, 339	22349271	CD, 270pF, 50V, K
C340, 341	22342103	CD, 0.01mfd, 50V, Z
C342	22488479	EL, 4.7mfd, 50V
C343, 344	22440635	EL, 2200mfd, 10V
C345, 346	22483470	EL, 47mfd, 10V
C401	22483221	EL, 220mfd, 10V
C402, 403	22488339	EL, 3.3mfd, 50V
C404, 405	22342223	CD, 0.022mfd, 50V, Z
C406, 407	22488339	EL, 3.3mfd, 50V
C409	22488109	EL, 1mfd, 50V
C410, 411	22349472	CD, 4700pF, 50V, K
C412, 413	22361100	CD, 10pF, 50V, D
C414, 415	22483470	EL, 47mfd, 10V
C416, 417	22360327	BL, 0.01mfd, 25V, M
C418, 419	22349102	CD, 1000pF, 50V, K
C420, 421	22349681	CD, 680pF, 50V, K
C422, 423	22360534	BL, 1500pF, 25V, K
C424, 425	22488339	EL, 3.3mfd, 50V
C426	22488229	EL, 2.2mfd, 50V
C427, 428	22488339	EL, 3.3mfd, 50V
C429	22486220	EL, 22mfd, 25V

Location No.	Part No.	Description
C430, 431	22349102	CD, 1000pF, 50V, K
C432, 433	22488339	EL, 3.3mfd, 50V
C434, 435	22488339	EL, 3.3mfd, 50V
C436	22362101	CD, 100pF, 50V, K
C437	22488229	EL, 2.2mfd, 50V
C438	22361209	CD, 2pF, 50V, D
C439	22485100	EL, 10mfd, 16V
C440, 441	22483470	EL, 47mfd, 10V
C442	22483470	EL, 47mfd, 10V
C444	22483101	EL, 100mfd, 10V
C445	22483470	EL, 47mfd, 10V
C447, 448	22488339	EL, 3.3mfd, 50V
C501	22483470	EL, 47mfd, 10V
C502	22483101	EL, 100mfd, 10V
C503	22360328	BL, 0.015mfd, 25V, M
C504	22342103	CD, 0.01mfd, 50V, Z
C505	22485100	EL, 10mfd, 16V
C506	22342223	CD, 0.022mfd, 50V, Z
C507	22485330	EL, 33mfd, 16V
C508, 509	22371103	MY, 0.01mfd, 50V, J
C510	22360333	BL, 0.1mfd, 25V, M
C511	22371102	MY, 1000pF, 50V, J
C512	22371222	MY, 2200pF, 50V, J
C513	22321198	PP, 0.015mfd, 100V, J
C514	22488229	EL, 2.2mfd, 50V
C601	22440454	EL, 100mfd, 6.3V
C602	22440652	EL, 47mfd, 4V
C603	22312223	Chip, 0.022mfd, 50V, Z
C701, 702	22483101	EL, 100mfd, 10V
C703, 704	22483101	EL, 100mfd, 10V
C705	22485100	EL, 10mfd, 16V
C706	22483221	EL, 220mfd, 10V
C707	22483101	EL, 100mfd, 10V
C708	22483221	EL, 220mfd, 10V
C709, 710	22483101	EL, 100mfd, 10V
C711, 712	22483101	EL, 100mfd, 10V
C713	22488109	EL, 1mfd, 50V
C714	22488229	EL, 2.2mfd, 50V
C715	22371104	MY, 0.1mfd, 50V, J
C716	22371103	MY, 0.01mfd, 50V, J
C717	22488478	EL, 0.47mfd, 50V
C718	22371104	MY, 0.1mfd, 50V, J
C719	22488228	EL, 0.22mfd, 50V
C720	22488109	EL, 1mfd, 50V
C721	22371333	MY, 0.033mfd, 50V, J
C722	22486220	EL, 22mfd, 25V
C723, 724	22349221	CD, 220pF, 50V, K
C725	22349471	CD, 470pF, 50V, K
C726	22371104	MY, 0.1mfd, 50V, J

Location No.	Part No.	Description
C727	22488229	EL, 2.2mfd, 50V
C728	22362101	CD, 100pF, 50V, K
C729, 730	22361470	CD, 47pF, 50V, J
C732, 733	22361330	CD, 33pF, 50V, J
C734	22361309	CD, 3pF, 50V, D
C735	22360327	BL, 0.01mfd, 25V, M
C736	22349151	CD, 150pF, 50V, K
C737	22361100	CD, 10pF, 50V, D
C738	22360327	BL, 0.01mfd, 25V, M
C740, 741	22361220	CD, 22pF, 50V, J
C742	22361220	CD, 22pF, 50V, J
C743, 744	22483101	EL, 100mfd, 10V
C745, 746	22485100	EL, 10mfd, 16V
C747, 748	22321060	PP, 1800pF, 50V, J
C749	22321054	PP, 560pF, 50V, J
C750, 751	22485100	EL, 10mfd, 16V
C752, 753	22488339	EL, 3.3mfd, 50V
C754, 755	22485100	EL, 10mfd, 16V
C756, 757	22321049	PP, 330pF, 50V, J
C758, 759	22321058	PP, 1200pF, 50V, J
C760	22485100	EL, 10mfd, 16V
C761	22483470	EL, 47mfd, 10V
C762, 763	22483101	EL, 100mfd, 10V
C764, 765	22360333	BL, 0.1mfd, 25V, M
C766, 767	22360333	BL, 0.1mfd, 25V, M
C768, 769	22360333	BL, 0.1mfd, 25V, M
C770	22360338	BL, 0.1mfd, 25V, M
C771	22360328	BL, 0.015mfd, 25V, M
C772	22486220	EL, 22mfd, 25V
C773	22349151	CD, 150pF, 50V, K
C774, 775	22483221	EL, 220mfd, 10V
C776	22483221	EL, 220mfd, 10V
C777	22362101	CD, 100pF, 50V, K
C801	22488338	EL, 0.33mfd, 50V
C802	22488109	EL, 1mfd, 50V
⚠ C901, 902	22342223	CD, 0.022mfd, 50V, Z
⚠ C903, 904	22342223	CD, 0.022mfd, 50V, Z
C905	22485331	EL, 330mfd, 16V
C906	22342223	CD, 0.022mfd, 50V, Z
C907, 908	22483221	EL, 220mfd, 10V
C909	22342223	CD, 0.022mfd, 50V, Z
C910, 911	22483221	EL, 220mfd, 10V
⚠ C912	22440753	EL, 4700mfd, 25V

Location No.	Part No.	Description
RESISTORS Resistors are Fixed Carbon Film, 1/6W, ±5%, unless otherwise noted. K = 1000, M = 1000000		
R1	22658760	5K ohm, B, Semi-fixed Variable, Tape Speed
R2	22658757	1K ohm, B, Semi-fixed Variable, Tape Speed
R001	22584153	15K ohm
R003	22584470	47 ohm
R007	22584569	5.6 ohm
R008	22584150	15 ohm
R107	22584223	22K ohm, Europe
R107		Short Circuit, U.K.
R201	22584331	330 ohm
R202	22658761	10K ohm, B, Semi-fixed Variable, Free Run
R203	22584273	27K ohm
R204	22584331	330 ohm
R208, 209	22584102	1K ohm, U.K.
R208, 209	22584182	1.8K ohm, Europe
R301, 302	22584680	68 ohm
R303, 304	22584680	68 ohm
R305, 306	22584101	100 ohm
R307	22584220	22 ohm
R308/309	22651670	50K ohm, B, Variable, Main Volume
R310	22651582	50K ohm, B, Variable, Balance
R311, 312	22584472	4.7K ohm
R313/314	22657368	100K ohm, W, Variable, EQ 3.5 kHz
R315/316	22657368	100K ohm, W, Variable, EQ 1 kHz
R317/318	22657368	100K ohm, W, Variable, EQ, 350 Hz
R319/320	22657368	100K ohm, W, Variable, EQ 100 Hz
R321/322	22657368	100K ohm, W, Variable, EQ 10 kHz
R323, 324	22584103	10K ohm
R325	22584332	3.3K ohm
R401	22584680	68 ohm
R408, 409	22584562	5.6K ohm
R410, 411	22584682	6.8K ohm
R412, 413	22584225	2.2M ohm
R414, 415	22584225	2.2M ohm
R418, 419	22584470	47 ohm
R420, 421	22584183	18K ohm

Location No.	Part No.	Description
R430	22584102	1K ohm
R440	22584225	2.2M ohm
R441	22584103	10K ohm
R443	22584682	6.8K ohm
R445	22584103	10K ohm
R453, 454	22584225	2.2M ohm
R455, 456	22584225	2.2M ohm
R457, 458	22584225	2.2M ohm
R459, 460	22584225	2.2M ohm
R461, 462	22584473	47K ohm
R463, 464	22584152	1.5K ohm
R465, 466	22584473	47K ohm
R467, 468	22584391	390 ohm
R469, 470	22584823	82K ohm
R471	22584105	1M ohm
R472	22584103	10K ohm
R481	22584225	2.2M ohm
R485	22584822	8.2K ohm
R491	22584123	12K ohm
R501	22584680	68 ohm
R502	22584183	18K ohm
R503	22584104	100K ohm
R504	22584102	1K ohm
R506	22584229	2.2 ohm
R507	22584220	22 ohm
R508	22584152	1.5K ohm
R509	22584472	4.7K ohm
R510	22584102	1K ohm
R511	22584182	1.8K ohm
R512	22584562	5.6K ohm
R513	22584331	330 ohm
R514	22584332	3.3K ohm
R518	22584104	100K ohm
R519	22584563	56K ohm
R520	22584563	56K ohm
R521	22584273	27K ohm
R528	22584472	4.7K ohm
R601	22521104	100K ohm, 1/10W, Chip
R602	22521331	330 ohm, 1/10W, Chip
R603	22521183	18K ohm, 1/10W, Chip
R604	22521222	2.2K ohm, 1/10W, Chip
R605	22521105	1M ohm, 1/10W, Chip
R607	22521102	1K ohm, 1/10W, Chip
R608	22521100	10 ohm, 1/10W, Chip
R609	22658887	1K ohm, B, Semi-fixed Variable
R610	22521101	100 ohm, 1/10W, Chip
R611	22521103	10K ohm, 1/10W, Chip

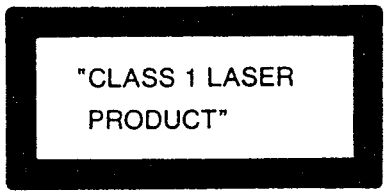
Location No.	Part No.	Description
R701	22584473	47K ohm
R702	22584184	180K ohm
R703	22584222	2.2K ohm
R704, 705	22584473	47K ohm
R706	22584104	100K ohm
R707	22584682	6.8K ohm
R708	22584222	2.2K ohm
R709	22584224	220K ohm
R710	22584473	47K ohm
R711	22584104	100K ohm
R712	22584222	2.2K ohm
R713	22584683	68K ohm
R714	22584183	18K ohm
R715	22584181	180 ohm
R716	22584331	330 ohm
R717	22584224	220K ohm
R718	22584473	47K ohm
R719	22584273	27K ohm
R720, 721	22584472	4.7K ohm
R722	22584222	2.2K ohm
R723	22584182	1.8K ohm
R724	22584472	4.7K ohm
R725	22658766	200K ohm, B, Semi-fixed Variable
R726	22658765	100K ohm, B, Semi-fixed Variable
R727	22584105	1M ohm
R728	22584683	68K ohm
R729	22658765	100K ohm, Semi-fixed Variable
R730	22584472	4.7K ohm
R731	22584333	33K ohm
R732	22584123	12K ohm
R733	22584151	150 ohm
R734	22584273	27K ohm
R735	22584274	270K ohm
R736	22584682	6.8K ohm
R737	22584103	10K ohm
R738	22584682	6.8K ohm
R739	22584184	180K ohm
R740	22584682	6.8K ohm
R741	22584274	270K ohm
R742	22658765	100K ohm, Semi-fixed Variable
R743	22584224	220K ohm
R744	22584153	15K ohm
R746	22584183	18K ohm
R747	22584103	10K ohm
R749	22584151	150 ohm
R751, 752	22584822	8.2K ohm

Location No.	Part No.	Description
R755	22584392	3.9K ohm
R756	22584103	10K ohm
R757	22584220	22 ohm
R758	22584562	5.6K ohm
R759	22584123	12K ohm
R760	22584683	68K ohm
R761, 762	22584102	1K ohm
R763, 764	22584183	18K ohm
R765, 766	22584822	8.2K ohm
R767, 768	22584562	5.6K ohm
R769, 770	22584103	10K ohm
R771, 772	22584272	2.7K ohm
R773	22584102	1K ohm
R778	22584473	47K ohm
R779	22584183	18K ohm
R780, 781	22555122	1.2K ohm, 1/4W
R901	22584100	10 ohm
R902	22584221	220 ohm
R903	22584100	10 ohm
R904	22584471	470 ohm
R905	22584331	330 ohm
R906	22584100	10 ohm
R907	22584331	330 ohm
R908	22584331	330 ohm
R909	22584471	470 ohm
R912	22584103	10K ohm
R914	22584569	5.6 ohm
R915	22584279	2.7 ohm
⚠ R920	22500275	5.6 ohm, 1/4W, Fusible

Location No.	Part No.	Description
ACCESSORIES		
⚠ AC01	22176616	Power Cord, Europe
⚠ AC01	22176626	Power Cord, U.K.
AC02	22908125	Owner's Manual, Europe
AC02	22908126	Owner's Manual, U.K.

CAUTION
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

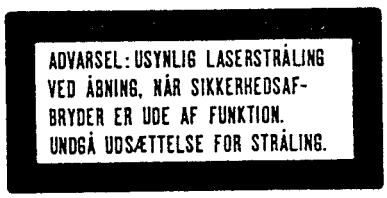
OBS! Apparaten innehåller laserkomponent som avger laserstrålning överstigande gränsen för laserklass 1.



ADVARSEL

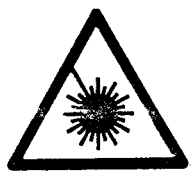
Denne mærkning er anbragt udvendigt på apparatet og indikerer, at appapatet arbejder med laserstråler af klasse 1, hvilket betyder, at der anvendes laserstråler at svageste klasse, og at man ikke på apparatets yderside kan blive udsat for utilladelig kraftig stråling.

APPARATET BOR KUN ÅBNES AF FAGFOLK MED SAERLIGT KENDSKAB TIL APPARATER MED LASERSTRÅLER!

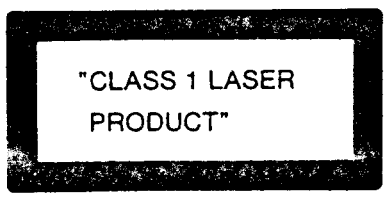


Indvendigt i apparatet er anbragt den her gengivne advarselsmærkning, som advarer imod at foretage sådanne indgreb i apparatet, at man kan komme til at udsætte sig for laserstråling.

Varoitus: Laite sisältää laserdiodin, joka lähettää näkymätöntä silmille vaarallista lasersäteilyä.



CAUTION: This equipment contains a laser diode which causes invisible laser radiation, which is dangerous to eyes.
Inside of the equipment, there is a warning marking of laser radiation.



CAUTION: This model is classified as a "CLASS I LASER PRODUCT".